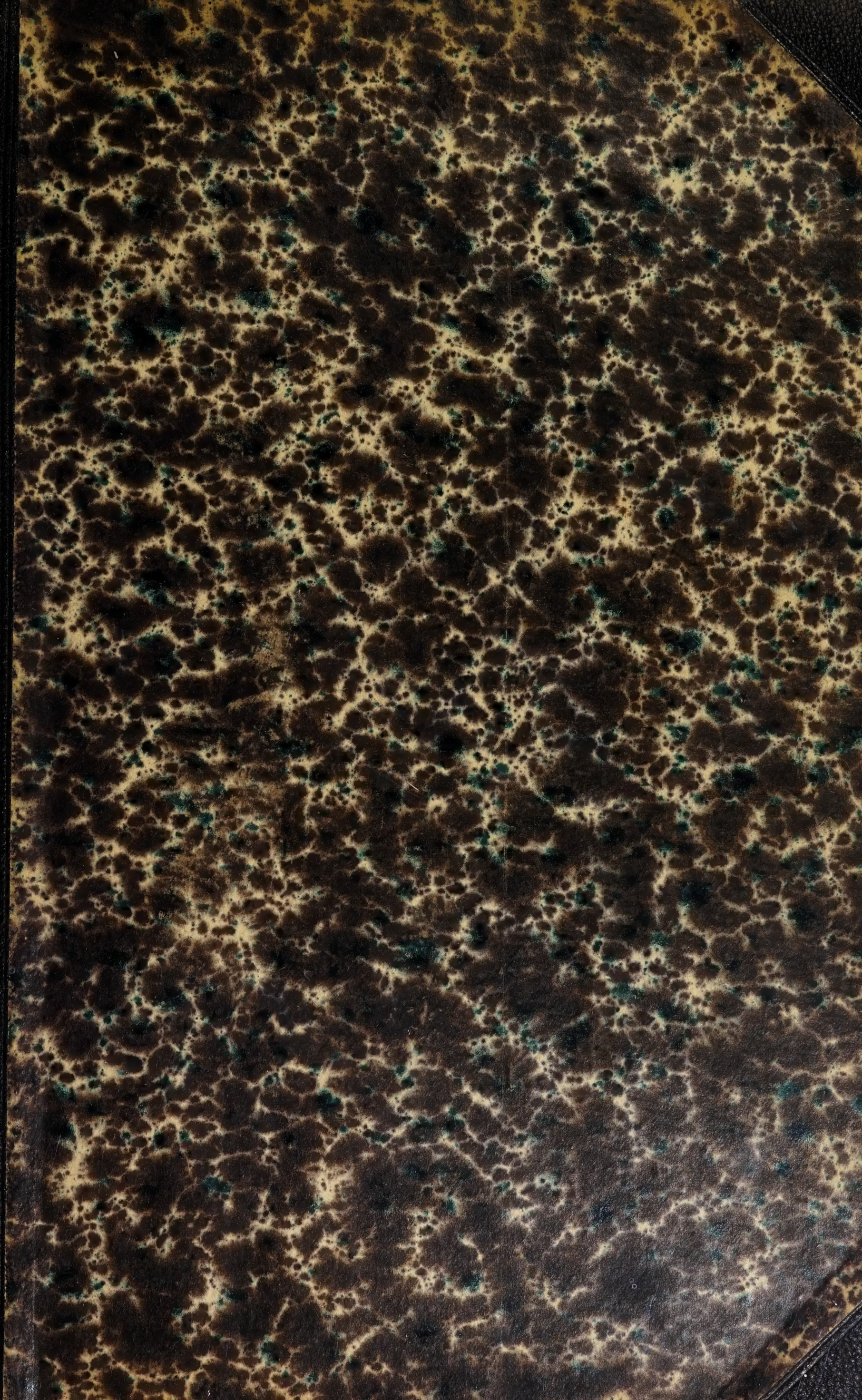


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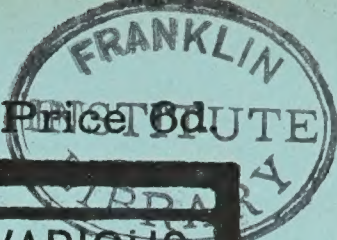
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THE JOURNAL OF ORIGINAL DESIGNS OF FABRICS

AND

TEXTILE

INDUSTRIES.

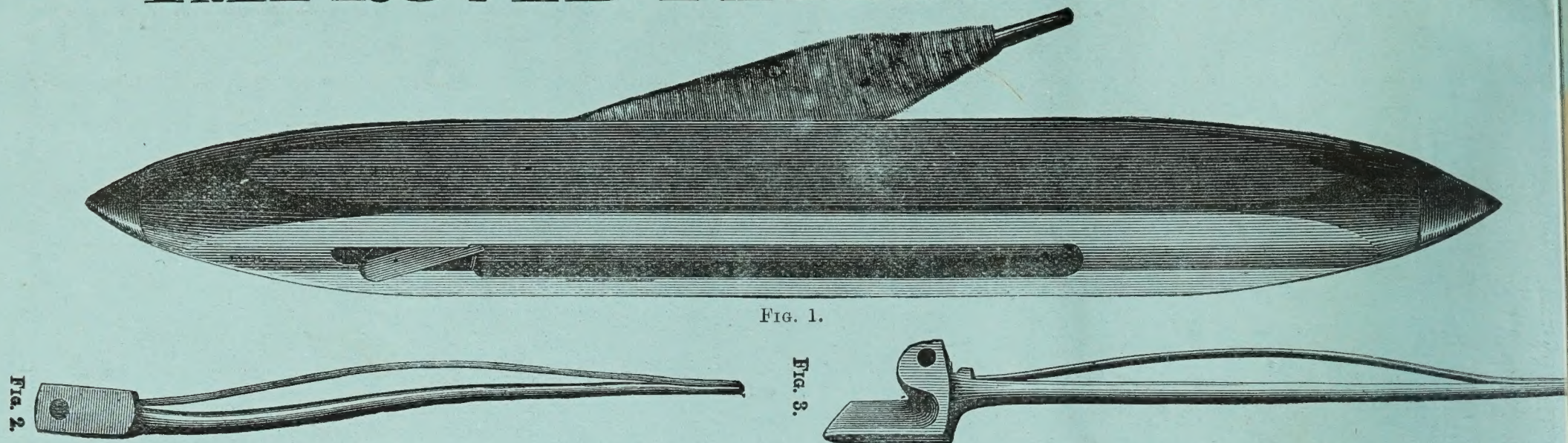
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INTERESTS OF
SPINNERS,
MANUFACTURERS,
BLEACHERS, DYERS,
PRINTERS, AND
FINISHERS OF ALL
CLASSES OF
TEXTILE GOODS.

EDITED BY
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IMPROVED PATENT SHUTTLE.



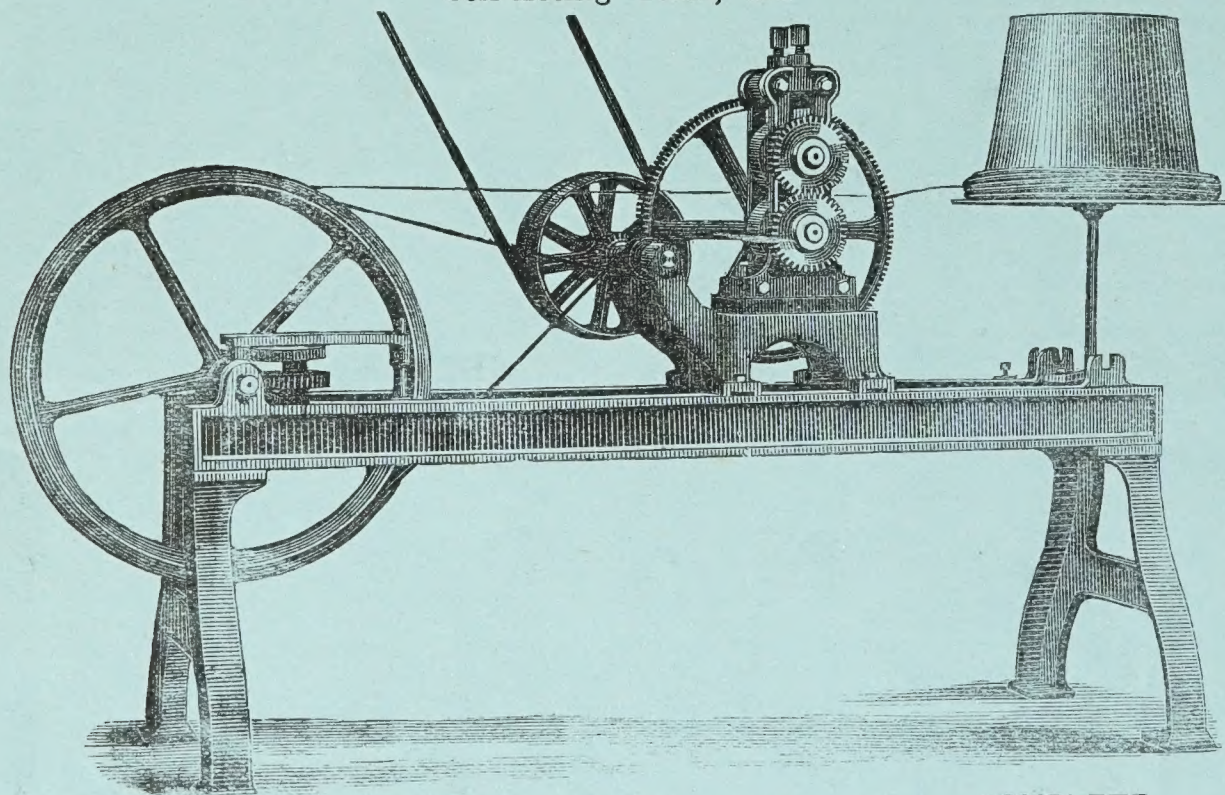
Extract from the "TEXTILE RECORDER," September 15, 1883.

Shuttles of the ordinary make are much weakened at the end where the tongue is fastened by having a large portion of the wood cut away to form a recess sufficiently large for the insertion of the spring, fixed at the bottom and stretching behind the root of the shuttle tongue, which is in a straight line from end to end. With this arrangement the shank of the shuttle tip, if of proper length, passes through the end of the shuttle and projects into the recess, instead of being embedded in wood. This often causes the tip to come loose for want of proper support. In the improved shuttle the recess is much shorter, the spring being on a different plan, and placed on the top instead of at the bottom, and the tip, being firmly fitted into a sufficient substance of timber, is much less apt to come loose. In the ordinary shuttle there are three pins, and these pretty close together—viz., the rest pin, the fulcrum pin, and the spring pin. The rest pin being only $\frac{1}{8}$ in. from the fulcrum gives a powerful and detrimental leverage, but in the improved shuttle there is only one pin, viz., the fulcrum, from which there is a whole inch of bearing. But the most important improvement remains. It is essential for the proper working of the shuttle, and even delivery of the weft throughout the cop, that the tongue should point directly to the eye, and neither above nor below it. It is also necessary that it should be firmly fixed at its root, so that it may have no play from side to side. In the ordinary make it has been endeavoured to secure the last of these points by fitting the square at the bottom of the shuttle tongue very tightly in the slot in which it works, so that, in a new shuttle, the tongue is drawn up to shuttle a cop, or put back again in its place, only by the exertion of considerable force. This is a common cause of shuttles splitting at that part, for the wood being worked very dry, swells to some extent when exposed to the damp

atmosphere of the weaving shed, and is apt to give way under the pressure. On the old plan the shuttle tongue always drops at the point, by degrees, with working, and the weft begins to break especially at the lower part of the cop, where the greatest strain on the thread occurs. The weaver finds this out, and drawing the tongue forcibly back, bends it upwards from an inch or two off the bottom, which is easy to do, because in that position there is a fulcrum and strong leverage. This means he raises the point until it again faces the eye. It will be seen that if this is done quickly and accurately, the bottom of the cop is exposed to greater strain, in consequence of the shuttle tongue being now crooked. When the weft breaks in the last quarter of the cop, the weaver puts his thumb behind the cop and forces it up to the middle of the tongue—from which position it generally slips off, being now on a smaller part of the tongue. In applying his remedy the weaver often overdoes it, and the point of the shuttle tongue stands too high. Then, as the readiest plan, he grasps the tongue in his hand, and forces the point downwards with his thumb to bring it into the right position, and then it assumes a doubly curved form (see Fig. 2), which is sure to break the weft and cause much waste. The improved shuttle tongue depends for its stability on a fresh principle. Instead of being straight from end to end, it is cranked downwards from the pivot or fulcrum (see Fig. 3), and then continued backwards in a line parallel to the first, so that when the cop is in weaving position the back part of the shuttle tongue is closed against the bottom of the shuttle into which it fits, being shaped in the form of a V reversed, and resting in a slot of the same shape. The spring is a polished plate of steel, which is firmly secured on the top of the shuttle by a single screw. Mr. Pickles designed the patent shuttle for his own use, but is now also supplying it largely to the trade.

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AND

Textile Industries.

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	Earnshaw's Improved Shuttle.

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Laws of Carriage.



ONE of the Travers' lectures upon "The Laws of Carriage" was recently delivered by Mr. M. Shearman, who said that among the branches of science which stood in danger of being neglected was the science of law, which was as valuable as any system of logic for mental training, while, unlike logic, which ended in the idle grinding of phrases, knowledge of the law of the land was an extremely useful possession for its practical results. The history of the progress of law was the history of the progress of civilisation in every age and country, and in our own country the history of legal reforms was an index to the social changes in the nation, for both our law and our society, after starting from a feudal basis, were gradually being moulded into the form suitable to the requirements of a commercial nation. The lecturer then proceeded to discuss the principle relating to the carriage of goods, leaving for the remaining lecture the question of the carriage of passengers. The subject was of great importance at the present day, as all the success of present enterprise rested upon the safe and rapid transmission of goods. The common or professional carrier was bound by ancient decisions to be an insurer of the goods he carried and to warrant their safe delivery. After pointing out that the scope of a carrier's business was defined by his advertised profession, the lecturer went on to explain the duties

and liabilities of the common carrier, to receive all the goods offered to him by any person tendering a reasonable compensation for the carriage, and to deliver them safely and expeditiously without loss or damage, "the act of God and the Queen's enemies alone excepted." After pointing out the various exceptions to this rule, it was shown how the means adopted by carriers to limit their responsibilities early in this century led to the passing of the Carriers' Act in 1830, by which the mutual rights of sender and carrier were adjusted over the points in difference. The provisions of that Act were then fully discussed, and it was pointed out, as of special practical importance, that the provision that not more than £10 could be recovered for the loss of any package containing jewellery, trinkets, &c., unless the articles were first declared and a premium paid for their insurance, applies equally to passengers' luggage as to goods sent by luggage trains. The subject of "special contract" whereby carriers limited their liability was then discussed, and the anomaly of the present law pointed out, by which a man could sue a common carrier for declining to carry goods and insure their safe delivery, and yet, if the same man chose to consent to a special contract freeing the carrier from liability, he had no remedy for the loss of or damage to his goods, and the lecturer suggested that the provisions which, since 1854, had applied to the special contract of railway companies as carriers should be made to apply to all the carriers of the realm. After a discussion of the rights of carriers to remuneration and their power to detain the goods until the remuneration was paid, the subject of carriers by sea and carriers by railroad was entered upon. It was pointed out that a bill of lading was a "special contract" by which the liability of the common carrier by sea was limited, and an explanation was given of what the law considered to be the risks and perils of the sea. The lecturer then expressed his regret that the limits of his subject prevented him from giving a full discussion of the chief points arising in railway law; but explained in brief how the attempts made by the railway companies to use their monopoly of power unfairly and to the prejudice of the trading public led to the passing of the Railway and Canal Traffic Act of 1854. It was then shown how a rigid system of Government interference had prevented railway companies in many ways from injuring trade and encouraging monopolies, and it was pointed out how the companies were prevented by law from making any unreasonable contracts for their own advantage, and were compelled to limit the amount of their charges to a certain *maximum*, and to carry for all comers at equal rates without giving any undue preference. The lecturer then proceeded to contrast the rigid Government control of railways in England with the freedom prevailing in America, which led to the "railway wars," of which an account was given. It was suggested that the freedom from State control in America led the railway companies to abuse their powers in America in the interests of monopolists and commercial "rings." The lecture concluded with some criticism on the Post Office, which had the monopoly of the carrying traffic of letters and telegrams in the country, and which was subject to none of the liabilities of the common carriers. So far the parcel post had been, comparatively speaking, a commercial failure, and the suggested explanation was that the commercial public, from whom the chief support was anticipated, declined to commit their goods to a carrier who was not bound by law to deliver safely and expeditiously and made liable for loss or damage, "the act of God and the Queen's enemies alone excepted."

Although the cotton crop bids fair to be short, there is every prospect of the staple being of a very good quality. The crop will certainly be below an average—though still better than last year—a long continued drought, which had not been broken at some points when the November returns were sent in, having exhausted the vitality of the plant, as well as induced an unhealthy growth. But for this the absence of early frosts would have resulted in a sensible increase of the yield, which by the latest estimates will now return per acre in these States—Virginia, 180 pounds; North Carolina, 175; South Carolina, 152; Georgia, 135; Florida, 105; Alabama, 130; Mississippi, 175; Louisiana, 190; Texas, 143; Arkansas, 200; and Tennessee, 160. There has been a fine season for picking generally, no storms to stain the fibre, and little or no dirt to reduce its value. "Prettiest crop in fifty years," reports one correspondent; and another says, "Perhaps more good cotton will be marketed than for several years."

The Importance of Good Water for Manufacturing.

In wool bleaching and wool dyeing, the water to be used plays such an important part, that it may be profitable to our readers to place before them some facts contributed to a contemporary by Herman Kraetzer, a German chemist. If the water contains too large a quantity of organic matter, it is slightly coloured by the same, and this water is liable to produce stains on the woollen goods during the bleaching. The quantity of the solid matter is found by carefully evaporating a large quantity of the water to dryness. In the process, boiling should be avoided. This is practically finished in a platina dish, which is finally dried at a temperature of 230° F. in a hot air bath. After igniting the residue, the mineral matter is obtained. The difference before and after igniting, however, does not represent the quantity of organic matter, but also water in the various crystallised salts. A quantitative examination of organic matter is very difficult; they may be determined qualitatively by the residue turning brownish by igniting and finally light again. If the residue gets dark and liberates singular odours it may be taken as a certain proof that organic matter is present. In cases where the water has been taken from rivers on which large cities are situated, the organic matter contains nitrogen, and therefore animal matter.—Such waters should not be used in wool bleaching. For wool dyeing, iron in the water may cause considerable trouble. In order to determine if any water contains iron, about 100 cubic centimeters are taken for test, and one cubic centimeter muriatic acid (chemically pure) added; then four or six drops of a solution of yellow prussiate of potash given to the mixture, by which the presence of iron is indicated by a greenish colouration, which colour turns gradually blue. If larger quantities of iron are contained in the water, a blue precipitate of Prussian blue will be formed. Iron contained in water combines with soda or any alkaline substance which may be used in the manipulations of the goods, and they form an iron soap, which not only produces stains, but also prevents the colouring matter working satisfactorily on the fibre. Water containing iron is so objectionable that it cannot be used even for dark shades, not even for blacks. Carbonate of lime, often accompanied by carbonate of magnesia, may not have so direct an influence on the goods, but they make a part of the soap worthless. Jarman considers one part of carbonate of lime sufficient to make ten parts soap worthless. In order to determine if a water contains carbonate of lime or carbonate of ammonia, it is only necessary to boil the water for some time, and then allow it to cool. If the water gets milky and a precipitate begins to fall down, the water contains considerable quantities of lime. Alcoholic soap solution would also form a precipitate. According to Jarman's experience, cochineal red and wood red will get a bluish tint if produced with water containing lime. Logwood and fustic colours seem to produce deeper shades, but lose in brightness and purity of shade. The water of large rivers often contains considerable quantities of ammonia salts derived from the decomposition of animal substances, which are generally originated by sewers, &c. Ammonia is not contained in the water in its pure form, but always combined with carbonic acid, and is indicated in the following manner: To ten cubic centimeters water are given two cubic centimeters of a mixture of an alkaline solution of iodide of potash and iodide of mercury, by which a yellow colouration will take place. The deeper and fuller the colour, the more ammonia is in the water. A more accurate test is the following: To two hundred cubic centimeters water are added ten cubic centimeters pure soda lye. A precipitate is formed, which is allowed to settle. After a few hours the clear water is drawn off about half of the original quantity, and the above iodine solutions added. If ammonia is present a yellow colouration will gradually take place. Water containing ammonia in larger quantities is unfit for wood-dyeing. Sample dyeing as a supplement to chemical analysis is a convenient method for the examination of water for dyeing purposes. Wool samples should be dyed first in distilled water or in water which has been found to be good for dyeing purposes, and then another sample should be dyed in the water for examination. The finishing operation is a washing of the first sample in distilled water and of the second in the questionable water, when it can easily be noticed if lime or any other impurity is contained in the same in such quantities as to make it unfit or objectionable for dyeing purposes.

Wages in the Textile Trades.

A retrospective glance at the rate of wages in the textile industries shows how much more heavily weighted they are in this respect than they were formerly. A recent statement concerning the woollen trade in France is entirely in keeping with the reports of some of our inspectors of factories. Fourmies is a considerable centre of the woollen manufacture, as, indeed, are all the neighbouring communes which go to make up the arrondissement of Avesnes, in the department of Nord. The following table gives the gradual rise of wages, in this neighbourhood, of the various branches of the factories:—

Year.	Spinners.	Piecers.	Factory Hands.	Machinists.	Day Hands.
1844 ..	4f. 0c. ..	1f. 0c. ..	0f. 70c. ..	3f. 0c. ..	1f. 50c.
1860 ..	4f. 65c. ..	1f. 35c. ..	1f. 35c. ..	4f. 35c. ..	2f. 75c.
1870 ..	5f. 20c. ..	1f. 60c. ..	1f. 80c. ..	5f. 85c. ..	2f. 80c.
1882 ..	5f. 60c. ..	2f. 40c. ..	2f. 25c. ..	6f. 20c. ..	3f. 50c.

This shows an increase between 1844 and 1882 of 40 per cent. in the case of the spinners, 140 in the piecers, 220 in the factory hands, 107 in the machinists, and 133 in the day hands. In Scotland we find from Mr. Henderson's report that the rates of wages now current in the flax and jute trade are 20 per cent. higher than they were in 1869-70, while the weekly hours of labour have been reduced from 60 to 56. The next table shows the comparative rate in 1870 and 1880:—

Class.	1870.		1880.	
	Per week.		Per week.	
	s.	d.	s.	d.
Weft winders (piece work)	7	0	8	3
Warp winders (piece work)	8	5	9	0
Warpers	8	6	9	8
Dressers (time work)	20	0	23	0
Weavers (piece work)	7	2	7	3½
Tenters (time work)	7	2	7	3½
Warehousemen	15	0	17	0

The earnings of the best weavers on broad looms is from 11s. to 13s. per week. Although the rise in these cases does not seem very great it is sufficient, in a factory with 200 power looms, to add from £340 to £350 per annum to the current expenditure. It seems almost ridiculous to compare the jute wages in Calcutta and Dundee, so great is the discrepancy. They are given as follows:

Class.	Calcutta.		Dundee.	
	s.	d.	s.	d.
Batching and preparing	2	10½	10	6
Spinning	5	0	11	0
Warp winding	2	7½	6	9
Weft winding	6	6	14	0
Beaming	5	0	15	0
Weaving	9	0	12	0
Calendering	5	0	14	0
Labourers	4	0	20	0

Of course the difference in the quality of the labour equalizes to a great extent what would otherwise be an unbearable competition, and the unevenness is also reduced somewhat by the fact that weekly labour in Calcutta is 52 hours, against 56 in Dundee. A more marked rise has taken place in cotton than in flax and jute, both in Scotland and Lancashire. It is stated, by the way, that in the former the cotton trade is rather on the decline, except in the weaving section.

Class.	1860.	1870.	1875.	1883.
Card-room hands ..	10s. ..	11s. ..	13s. ..	14s. ..
Mule-spinners ..	22s. ..	24s. ..	26s. ..	28s. ..
Strippers & grinders.	14s. ..	15s. ..	18s. ..	17s. ..
Winders ..	— ..	9s. ..	10s. ..	10s. 6d.
Weavers ..	— ..	12s. to 16s. ..	13s. 6d. to 18s. ..	16s. to 22s. ..
Average per loom ..	— ..	4s. ..	4s. 6d. ..	5s. ..

A correspondent writes:—The two chief staples of the large export trade of China are tea and silk, and the decline in the tea trade in recent years has caused some alarm to the Chinese authorities, who have tangible evidence of the value of foreign trade in the revenue derived from their customs due. In the season 1880-1 the export of tea reached its maximum—viz., 174,514,000 pounds, while in 1860-1 it was only 90,066,000 pounds. But in 1883-4 it was only 151,140,000 pounds, or 23,374,000 pounds less than in 1880-1. Still greater is the decline in the export of silk, which in 1860-1 reached its greatest height, 79,199 bales, and 1883-4 only 17,869 bales—a fall of more than 75 per cent. The decline in the export of tea is due to the growing taste for Indian tea in England, and to the increased export of Japanese tea to the United States; while the larger areas in southern France and Italy given up to mulberry plantations for the silk-worm account for the fall in silk. French and Italian growers have imported largely from China and Japan silkworms' eggs, and it is quite probable that in the near future Europe will be independent of the East in the matter of silk.



Ornamentation of Textiles.

(Continued from Page 70.)



N Homer's poems, which were preserved by the posterity of Cleophylus, and gathered together by Lyeurgus, who was the first to give them to the world, about the time of Solomon, some nine hundred years before the Christian Era, we read that the heroines Helen, Circe, Penelope, and Calypso employed their leisure time in needlework and embroidery, and they are frequently spoken of by the poet in connection with their spindles, distaffs, and woollen stuffs. Amongst the Egyptians, embroidery was a common employment in all grades of society; this household occupation was common amongst the Assyrians, the Indians, Persians, and the Chinese—these nations worked the material with the greatest delicacy. Robes manufactured for persons of distinction were enriched with very complicated and ingenious designs, were wrought in gold threads, and were of enormous value. The Babylonians were great masters in the art of decoration, including embroidery. It was at Babylon where were produced those magnificent and marvellous coverings for the couches set apart for the guests at the great banquets, and which are said to have cost thirty-two thousand pounds sterling. The Babylonians also were very skilful in weaving large designs of many colours; their cloths were very rich, woven with figures of animals, fishes, and birds; sporting subjects also ornamented their fabrics, as hunting, fishing, and shooting; their brocade included those subjects for design. The colours mostly used included scarlet, blue, and purple, enriched by gold and silver thread. Silk seems to have been for a very long time the monopoly of China (some writers say the exclusive monopoly of the Chinese) until the second or third century before the Christian Era, and it is very difficult to say exactly when it first found its way from China to Egypt. In the books of Ezekiel and Proverbs, we read of this precious thread, but there is much doubt as to the translation of the Hebrew word then used; some historians affirm that silk was unknown to the Israelites. It is, nevertheless, true that the Egyptians had some knowledge of a thread very much like silk, procured from certain worms, which they spun and manufactured into a material of a very thin and transparent character, and of a very silky appearance, but said to be of an unsubstantial nature. It is natural for us to come to the conclusion that each country or people would use such materials as were obtainable by them, and we find that wherever civilisation has found a footing the people have shown traces of ornamenting textile fabrics made from such materials as their country produced. In the absence of silk, which had not found its way into Egypt until the second or third century before our Era, cotton, linen, flax, and wool, with gold and silver thread interwoven, sufficed the Egyptians in the manufacture of their textile goods. We gain some idea of the quality of the fabric, and of the skill of the Egyptian workman, by examining the piece of mummy cloth exhibited in the British Museum, sent to England by Mr. Salt. It is a piece of linen made from a thread, 100 hanks to the pound, or 84,000 yards in one pound avoirdupois weight; 140 threads per inch in the warp, and 64 picks per inch in the weft. In his "Hand-book of Textile Arts," to the South Kensington Museum, the very Rev. Daniel Rock, D.D., tells us of a cloth or piece of linen obtained at Thebes which has 152 threads per inch in the warp, and 71 picks per inch in the weft. We read in Exodus of the very extensive use of gold thread or wire and twisted linen, also of the workmanship and manipulation in making the gold thread,—“And they did beat the gold into thin plates, and cut it into wires, to work it in the blue, and in the purple, and in the scarlet, and in the fine linen, with cunning work” (Exodus xxxix 3.)—thus giving us their ideas of the perfection of colour, and leaving us to imagine that their “cunning work” was the result of superior skill, and of great ingenuity. The inspired Psalmist, speaking of the king's daughter, says, “her clothing is of wrought gold, and she shall be brought unto the king in raiment of needlework” (Psalm xiv. 13, 14). Herodotus, speaking of Egyptian workmanship, tells us of a piece of linen which was especially to be admired, as each twisted thread contained no fewer than 360 strands, and upon it were interwoven vast numbers of figures of animals. From these extracts we may be assured that when they could card and spin cotton, linen, and flax to such a high degree of perfection, the fabrics produced from these fibres must have been beautiful, and therefore they could well afford to dispense with silk. The Egyptians were satisfied with the products of their own soil, along with cotton imported from India, which was manufactured into textiles. They were most famous for striped cloths, figured fabrics, plushes, and velveteens, and for other curious fabrics; specimens of which may be seen in many of our public museums. It is very evident from the Book of Exodus that needlework and embroidery were the chief methods adopted for ornamenting woven goods amongst the Jews; but the word embroidery may in some instances refer to weaving and not always to the work of the needle. Egyptian tapestry was ornamented with paint-

ings as well as embroidery. We read in the Book of Proverbs (vii. 16), “I have decked my bed with tapestry, with carved works, with fine linen of Egypt.” Doctor Rock, in his work on “Textile Fabrics,” renders the text, “I have woven my bed with cords, I have covered it with painted tapestry from Egypt.” Thus we find that linen was not only used as household furniture amongst the Israelites, but that it was really manufactured in Egypt. It may here be asked how was it that the Egyptians did not avail themselves of the valuable discovery of silk, which, according to the Chinese historians, was in existence upwards of three thousand years before our Era? We may answer in the first instance, as previously stated, that probably the Egyptians were content with their own productions, namely, linen, flax, and wool. When the Jews were migrating from Egypt, from whence they procured their costly materials, they had no silk included in their valuables, nor do they seem to have had knowledge of any fabric, except linen, cotton, flax, and woollen. Secondly, it may have been owing to the very jealous disposition of the Chinese people, and to their desire to keep the monopoly of the manufacture to themselves, for at last, when the silkworms were brought to the west, they were carried from the country by stealth; or it was because they shut themselves up from all communication with the west, so that if silk had been manufactured in quantities large enough for exportation, it would have found no outlet for exportation to other countries. The Chinese are a very suspicious people; if they had any project advanced to them by a foreigner, which ought to be to their mutual advantage, they would cheat the foreigner out of it if they could, but will not generally accept any foreign innovation which would prove a benefit to both parties; we must give them credit for being exact, but of small ideas; they are industrious, but conservative in their notions and habits, hence the great similarity between their designs for textiles of some thousands of years ago and those of the present day. We must now return to their remarkable manufacture of silk, which they undoubtedly kept to themselves so very many centuries. Aristotle is the first Greek author who mentions the valuable insect, the silkworm. He states that silk was first woven in a small island in the Grecian Archipelago, named Cos, the modern name of which is Stanco. At this place, the ancient writer tells us that Pamphile, the daughter of Platos, is reported to have first woven silk.

(To be continued).

English, Scotch, and American Terms.

Twelve months ago we gave some information relating to the difference in terms used in designing, &c., in the worsted and woollen districts. It has been suggested that they should be repeated for the benefit of our new subscribers, as the issue containing the information is now out of print. The following includes English, Scotch, and American terms:—

South of Scotland.	Yorkshire.	America.
Twice Drawn.	Roved.	Double Spin.
Porters.	Porties.	Porters.
Reed.	Slay.	Reed.
Split.	Reed.	Dent or Split.
Heddle.	Heald.	Heddles.
Leaves.	Shafts.	Harnesses.
Shots.	Picks.	Picks.
Caulm.	Gear.	
Heddle Eyes.	Neetzes.	Heddle Eyes.
Celtic.	Hopsack.	Celtic.

TABLE OF MEASURES.

1 Cut=300 yards=10,800 inches.
 1 Split=12 Cuts=3,600 yards.
 1 Ell, relating to Caulm and Reed=37 inches.
 1 Ell, relating to warp yarns in warping and weaving=45 inches.
 1 Porter=40 Threads. Hawick Knot=80 Threads.
 1 Porter, 2 in Split, of any Reed=20 Splits. Originally, all Webs were 2 Threads in a Split.
 1 Porter, 4 in Split, of any Reed,=10 Splits.
 1 Porter, 3 in Split, of any Reed,=13½ Splits.
 The number of a Reed is the number of Porters on 37 inches; thus, a 20 Reed is 20 times 20=400 Splits on 37 inches; an 18 Reed is 18 times 20=360 on 37 inches; and so on with all the other numbers of Reeds.

YARN GREASY WEIGHT.

1 oz.=16 drachms.
 1 lb.=24 oz.=384 drachms.
 1 lb. Hawick 26 oz.=416 drachms.

MACHINE WOOL WEIGHT.

1 oz.=16 drachms.
 1 lb.=16 oz.=256 drachms.
 1 stone=24 lbs.=6144 drachms.

Skein 1520 yards=1 Porty, 12 Strings long.

Werturn, 6 lbs.=1536 drachms.

String=120 inches.

Porty=38 Threads.

Sett in Slay is the number of Porties of 19 Reeds in 9 inches. The number of Skeins is the number of yards in a drachm; thus, 10 Skeins of yarn is 10 yards in a drachm; 12 Skeins=12 yards in a drachm, and so on; and is related to Gala × by 1½; but the Yorkshire Skein is as × by 1½, being a slight deviation for convenience in calculation by the Werturn of 6 lbs.=1536 drachms, instead of 1520 yards, 1 Skein. The yarn is therefore finer or longer by 16 yards in a Werturn than it is given up for.

The American Exhibition (London), 1886.



THE promoters of this exhibition, in their recently issued statement, thus set forth its scope and objects:—"A new departure in the history of exhibitions will be made in the year 1886, precisely 101 years since John Adams, the first Minister of the United States who came on a friendly mission to Great Britain, presented his credentials to King George III. An American Exhibition is to be opened in London on the first of May, 1886. The United States Government, the governors of the most important States and Territories, the Consul-General in London, the great civic and commercial corporations, and a large number of the most distinguished and eminent citizens, including many of the largest American manufacturers, merchants and producers (a number of whom have already applied for about 100,000 square feet of space) having expressed approval, a complete representation will be given of the arts, inventions, manufactures, products, and resources of the principal nations of the New World. The advantages of such an exhibition are manifold, in that the friendly relations of the two countries will be strengthened; American inventors, manufacturers and producers will have for the first time an opportunity to present to Europeans the many improvements made during the past half-century; while visitors to the exhibition from all parts of Europe and the colonies will carry away valuable lessons on the improved modes of production stimulated in America by the dearth of labour. The industrial departments of the exhibition, in all their varied branches, will invite and attract special attention to the wonderful progress made in the United States of America since the Centennial Exhibition of 1876. Besides comprising much of interest that has not yet been seen in Europe, the great improvements made by Americans in all branches of labour-saving machinery, especially for the utilisation of wood and metals, the practical helps for household purposes, the advantages secured by new motors, and the most recently completed appliances for using the telegraph and the telephone, will possess a deep interest for Europeans and visitors from the colonies. Arrangements are also being entered into by which some of the best of the American exhibits from the World's Exposition in New Orleans, 1884-5, and from the International Exhibition of Antwerp, 1885, will be brought over to and warehoused in London, until the opening of the American Exhibition in 1886. The mere announcement that an American Exhibition will be held in London in 1886 has already awakened the keen rivalry of American inventors, and it may be stated with confidence that, as the result, a number of new and entirely original inventions will be exhibited by enterprising Americans. Such an exhibition—the first of its kind—will doubtless attract as many visitors as the Fisheries Exhibition of 1883, and the International Health Exhibition of 1884, and in no better or more economical way can the great advantages of the United States be presented to the public. It must be borne in mind that there is in London a large transitory population, representing all parts of the world, that will, by means of the proposed exhibition, have an opportunity of examining American manufactures, and of introducing them into their several countries. Interest in the American Exhibition is still further enhanced by the fact that it has been decided to open a Colonial Exhibition in London in 1886, so that there will be a friendly rivalry on the part of Australia, Canada, and India with the United States. This new feature in London life will be sure to contribute many thousands of visitors to the large number expected in 1886, and thus bring about an accession of visitors to the American Exhibition; for those who are attracted to London by the Colonial Exhibition will not fail to profit by the opportunity afforded them of paying a visit also to the American Exhibition, and *vice versa*. The manufacturing department of the exhibition will comprise the development in every branch of that inventive genius which, in the United States, has reached so high a point, and, as far as possible, it is proposed to present the various processes in working order, by the aid of electricity, steam, gas, or hydraulic power. Not only sight-seers, but manufacturers, land-owners, commercial men, farmers, all who are interested in stock-raising, and all who think of emigration, will find much

to study in the exhibition. Some of its results will, therefore, certainly be to increase the investments of capital in American enterprises, to attract a higher class of settlers to the United States, and to augment the export trade of America, while affording to Europeans and visitors from the colonies a unique opportunity of obtaining much valuable information of a most varied and useful character. Medals in gold, silver, and bronze, and diplomas of honour will be awarded on the recommendation of juries composed of eminent Englishmen in each profession, trade, and branch of industry represented. The plan of the proposed exhibition has been received with enthusiasm in America, and is meeting with an amount of practical support there, as in Great Britain, which cannot fail to make the display national and representative in the fullest sense of the terms. The exhibition has already served to stimulate and give expression to the desire which prevails, both in the United Kingdom and the United States, for a more intimate mutual knowledge and appreciation. The international sympathies which have been evoked are neither feeble nor insignificant; and it is to maintaining and enhancing them that we may most confidently look for a continuance of material and moral progress on both sides of the Atlantic."

The Cotton Trade of 1884.

The textile industries of the country have had a rather variable experience. The worsted manufacturers of the Bradford district have experienced a welcome and much-needed return of prosperity, and, broadly speaking, it may be said that the woollen manufacturing industries of the country have fared pretty well. Linen and jute manufacturers have had to struggle against most seriously adverse conditions. Still more difficult has been the experience of cotton manufacturers in Lancashire, who have had all along to contend against gradually declining or at the best stationary prices for goods, whilst the cost of production has been so high as to afford no margin for profit. There is probably no department of British industry in which the cost of production is so accurately determined as in that of the cotton manufacture, and those who are responsible for the conduct of it know quite well when it is to their advantage to lessen the production, whether by stopping machinery, or by working short time. It may, therefore, be accepted as a substantial proof of the bad state of the trade that during the half-year there has been at no time a full rate of production. By voluntary means, looms have been stopped or put upon short hours. In the earlier half of the year the production was lessened by an extensive strike in the Blackburn, Darwen, and Padiham districts. In spite of these various modes of lessening the out-turn, however, the market for goods has all along shown signs of "over-production." This is, perhaps, the most significant feature of the year in the cotton goods market, and it is one which manufacturers will certainly have to take into serious consideration during the early weeks of the coming year. In Scotland, the markets have been quiet and lifeless throughout the year, with a marked diminution in the consumption towards its close. Prices of American yarns are nominally $\frac{3}{4}$ d. to $\frac{1}{4}$ d. per lb. lower than on January 1st, but have fluctuated 10 per cent. during the currency of the year—the highest points being in May and June, and the lowest in October. The continued dulness amongst cotton manufacturers and the consequent reduction of the consumption have told seriously on the trade, and it is a question whether for many years so little weight of yarn has been taken. The fluctuations of the raw material and the unsatisfactory nature of the home and foreign markets proved too powerful influences for even wealthy houses to contend any longer against; and the consequence is seen in the excessive reductions that have taken place in all works. The one hopeful feature, however, is in the prospect that such a state of general restriction must bring its own cure, and perhaps capitalists may reap benefits early in the New Year even as an outcome of present sufferings. The textile manufacturers began the year with a fair amount of orders in hand, and the spring trade was moderately satisfactory. An exceptionally fine summer gave hopes of splendid trade, but these were dispelled early in the autumn, and ever since there has been a steady curtailment of looms, and short time. Turkey red-dyeing has been fairly busy in goods for the greater portion of the year; but calico printing has not been so brisk.

Dissecting Textile Fabrics.

Twelfth—The next move will be to deduce the drafts from the memoranda taken from the sample. To do this, proceed as in deducing drafts from designs originated. (See Textures.) As regards the use of instruments, little need be said; they make a way into every thinking man's favour with little help. While some authors recommend magnifying glasses for cotton only, others reject all optical aid. While some advise a shawl pin for a dissecting point, others call for a coarse needle in a piece of wood for a handle. Indeed, so many opinions have already been expressed, and so arbitrarily, to say more seems to be adding to the confusion. By calling attention to points not brought to notice by others, some good may be done. First, then, as regards optical aid; we hold that the strongest eyes cannot endure the task of picking out continuously for any length of time, but by the use of instruments suited to the work and the eyes, this time may be prolonged and the work done with greater ease and accuracy. In place of proper dissecting needles, the shawl pin may do for Scotch cheviots and the like; the coarse needle may be an improvement upon the pin, but neither of these are a credit to a man who follows a calling, the life and soul of which is a natural disposition to habits of taste and neatness which alone can beget the same characteristics in designs. Furthermore, a dissecting needle should not have a point like a pin or sewing needle, but should taper regularly from the point to within one-third of the length from the base, and nearly all of this one-third should be taken into a delicate but firm and strong needle holder, which will permit a change of needles to suit the work. Four or five different kinds of needles should always be at hand, three sizes of round pins, one or two sizes of straight flat needles, and at least one size of bent flat needles. The flat needle has the advantage of affording strength and less obstruction to the view than a round one, while a bent one allows a different angle for the holder, sometimes necessary when working with a short focus instrument. The other instruments which are almost as indispensable as the needles are a pair each of very fine, delicate, curved, elbow and straight scissors, a pair of good stage forceps, at least one good dissecting knife, and some linen provers to use separately or with microscope. The curved scissors admit the blades close to any flat surface; with the elbow scissors one may make a cut in a mounted sample when on the stage, while the straight ones are always needed. The forceps will pick up a fibre, thread or even a bit of flocks, that would be too small for the most delicate fingers; when once accustomed to them they will be found so convenient that they will be in constant use when dissecting. The dissecting knife is often needed to cut where or what the scissors cannot reach. Linen provers, with or without lenses, are nothing more nor less than gauges whereby the threads may be correctly spaced and counted.

Other methods are recommended by various authors; one of the instructions, recently made public, directs the operator to fasten the sample to a circle made by pasting the two ends of a strip of card board together, but fails to point out any advantages in favour of this novel contrivance for filling the hands with unnecessary articles. A better method when a sample is to be dissected for the texture without optical aid, is to sew the sample to a round ball of convenient size upon the end of a suitable handle. The ball, when smoothly covered with a knit fabric, is a good foundation upon which the sample may be fastened quickly. There is no trouble in procuring these ready-made. Ashton recommends the following order of proceedings:—"When a draft is required, examine the cloth to see if there is any nap on the back of it; if there is, it should be burned off by means of a lighted match, care being taken not to burn the threads. If the sample should be a cotton pattern, a magnifying-glass must be used. Next, remove as many of the filling-threads as will leave about one-eighth of an inch fringe. If there are any double and twist threads in the warp or filling, always commence with them. Remove as many of the warp threads as of the filling. When raising the threads be careful not to split those of the warp. Now, having the sample prepared, take it in the left hand between the forefinger and thumb, holding it so that the second finger may secure the threads as they are picked out. Commence at the right-hand side of the sample. Note

down on the designing paper all the threads on the filling, and call them so many threads *on*; and all the threads under the filling, call them so many threads *off*. Leave as many blank checks as there are threads under the filling. Continue to work thus, until the pattern repeats itself in both warp and filling, and the draft is complete. Sometimes, however, there are repeats in samples; these can be found by taking out two threads more than the pattern so called, and if both repeat, then the draft is correct, but if only one repeats, trace the draft until both warp and filling repeat. The next thing is to reduce the draft. At this point, do not forget that it is the filling that has been picked out, therefore, after the draft is complete, turn it round one square from right to left, and let the reduction begin at those lines representing the warp. Strict care must be taken that the threads are drawn into the heddles as indicated in each harness, otherwise the work will be a failure." Burns gives instruction in more minute details, but very similar in general principles. Baldwin differs more, and it is by many considered more clear and to the point than the other two. The fact is, each has some good features to be commended, and all should be studied after the beginner has made progress enough to be able to judge them fairly. *Dissecting the Yarn* is now necessary. The information which is to be ascertained is important; therefore, no pains should be spared nor any part of the work hurried. The size of the threads, the amount of twist, stock and colours, if a mixture, are the principal points. The nature of the colour should also be investigated. To find the correct size of the threads in a sample, there is but one way positively sure, that is to pick out 36, 72, or 144, just one inch long without tearing them in the least. Weigh these; having thus found the weight of one, two or four yards of yarn, the size is easily estimated. But the difficulty lies in getting these threads. Sometimes it is impossible; at all times too slow if one has acquired a good judgment of sizes and the allowances necessary for the take-up of yarn by the curvature caused in each thread by the fabric. Precision and accuracy are best attained by much practice with samples, the size of which is positively known. Be the size ascertained by weighing, judgment, or guess work, it must not be taken for granted, but proved, by estimating the weight of one yard of cloth from it. To do this the threads per inch each way must be found. The threads per inch in the warp must be multiplied by the number representing the width of the finished goods, the threads per inch in the filling by the number representing the width of the warp in the reed, in inches. The proportion of each kind of yarn in a pattern being known, the same proportion holds good in a full yard of the goods; when found, the quantity of each kind of yarn per yard is found in ounces by means of the yarn number, (ascertained in either of the three ways above mentioned.) Add all the weights together. If the sum of the weight per yard, with proper allowances for shrinkages, &c., prove correct, or as wanted, the estimate of the size number is right; if not, proceed to revise the numbers until the work does so prove itself. In counting the threads on a piece of cloth, it is a common practice to use a fraction of an inch as a gauge. The errors which are liable to creep in this way are worth a moment's consideration. Let us suppose a $\frac{1}{4}$ -inch linen prover or pick glass is used; a portion of a thread projects within the gauge; it is only a small portion, say one-fourth of the thread, but it is dropped; this makes one thread missing per inch; in 54 inches it is 54 threads, quite an item. Larger gauges, then, are a decided advantage, particularly when counting coarse yarn; when counting the threads by patterns or fractions thereof, a two or three inch gauge should be used. The amount of twist is easily counted by laying a thread under a gauge upon a card, and placing them under a microscope. The fibres in each thread may also be counted under a good glass, and the proportions of mixtures ascertained to a certainty, the nature of the colours will be obtained at the same time. The stock is a matter of consideration requiring a deal of sound judgment, but the microscope is a great aid in discovering peculiarities. The stock in the sample should be known even when another class of stock is to be used in the imitation, else how can a fair judgment of the final difference be attained. In dissecting threads the fibres are sometimes unruly on account of electricity upon clear cold days; a very little moisture applied to the stage of the microscope or the card upon which the sample threads lay, does away with this difficulty.—*Spitzli's Manual*.



ORIGINAL DESIGNS.

On our first plate we give an elaborate design for a Tapestry Quilt which has been drawn by Mr. W. Tait, 34, Carter Street, Greenheys, Manchester. It will readily be admitted that the works of this designer, which have appeared in our Journal, are of an unusual standard of excellence, and the pattern now shown forms no exception. For the purpose intended, it would be difficult to invent a design more suitable and pleasing, whilst it is equally adaptable to other purposes, as, for instance, a Tapestry or Linen Table Cover, or the border might be woven separately for Valances and for many other varieties of uses.

* * * *

On our second plate will be found a simple design for a Silk Damask, which will have a very effective appearance if utilised as a furniture fabric. This is the work of Mr. R. T. Lord, 28, Edmund Street, Bradford.

* * * *

On our third plate we give three designs for Ladies' Mantle Cloths, particulars of which will be found on page 7.

Prize Competition.

We beg to call the attention of our readers to the Fifth Prize Competition for designs of various classes of fabrics.

For the best Six Designs for materials for Ladies' or Gentlemen's wear. They may include silk, cotton, worsted, woollen, or mixed dress or other goods, suitable for ladies' wear; and coatings, trouserings, suitings, vestings, in worsted or woollen; cheviots, tweeds, &c., for gentlemen's wear.

First Prize, a Silver Medal; Second Prize, a Bronze Medal. Preference will be given to competitors who forward woven samples of their designs. The successful designs become the property of the publishers.

The entries for the competition close January 16th, 1885. All designs must be sent in not later than January 31st, 1885. Names of successful competitors will be published in the February issue of the Journal.

TO MANUFACTURERS AND DESIGNERS OF CLOTH.

The latest patterns of French and English Coatings, Vestings, Suitings, Fancy Cloths, Cassimeres, Tweeds, Mantle Cloths, &c. These Patterns give the latest Designs and Colourings for Cloths for the Autumn and Winter Seasons in 1885-86.

100 SAMPLES FOR £2. CARRIAGE PAID.

A remittance must accompany order, made payable to H. and R. T. Lord, the "Journal of Fabrics and Textile Industries." Office, 10, Ann Place, Bradford, England.

The Worsted and Woollen Trades in 1884.



URING the past year these branches of industry have, on the whole, been much more satisfactory in every respect than any other in the United Kingdom. In the Yorkshire districts, especially in Huddersfield, the production of cloths as regards excellence in point of design, colour, and superior finish, combined with durability and cheapness, has been of the highest order. Manufacturers have, owing to the excessive competition both at home and abroad, been put upon their merits, and have come out of the ordeal most successfully. In the worsted coating and trousering branch a great diversity of patterns has been prepared for the market, and, owing to their great excellence, they have, as a rule, met with a good demand. In the Bradford districts numbers of manufacturers have, during the past year, commenced the production of this class of goods, and they have got such a hold upon it that there seems every probability that in the future the other cloth districts will have to compete energetically with them if they are to hold their own in the markets.

Bradford has still much to learn in this branch, especially in the finishing department, but they have put their shoulder to the wheel, and will, no doubt, overcome all difficulties. In the manufacture of worsteds and woollens of the better class for trouserings and suitings, the West of England has been well to the front in the varieties for which it has hitherto been noted, but the general competition has rendered the production less remunerative than could have been wished. Still the goods generally have been, in point of merit, far ahead of those produced three or four years ago. Yorkshire manufacturers have also made rapid strides in this department, and are sanguine of better things in the future. In cheviots, tweeds, &c., some splendid cloths have been produced in the Scotch districts, although they have not met with the success they have deserved owing to fashion running upon the finer qualities of fabrics and the smaller effects in design. In the medium and lower qualities of cloths, some new and effective departures have been made with success, but the unremunerative prices have been much against any great ventures being made in these branches. As regards fabrics made for export to France, the trade in low goods has been comparatively small. This is owing to the fact that such goods, being made of wool and cotton mixed, not having a distinct cotton warp, pay the same rate of duty as the finest woollens. Thus the low goods taken by France have been chiefly those made in Dewsbury, Batley, and Leeds, with cotton warps. The stability and progress of the financial and commercial position of Italy would have helped much to make our trade with that country more than the average one it has been but for the cholera; still there is one favourable sign to be noted—not many years ago a similar visitation would have been made the pretext for suspension of payments, but this year no such attempts at swindling creditors have been made, owing to the facts that the country is now better off than formerly, and the commercial laws are stricter. So far, the worst effect of the cholera on our trade has been an extension of the period of credit. Both fine and cheap fabrics have been sent to Italy, although the trade in low goods suffers from the duties in the same way as it does under the French tariff. Prospects for next season are not so bright as regards these countries, but a severe winter and an absence of cholera would have a good effect on the outlook. Germany has taken a fair quantity of fine goods, but cheap cloths cannot be got into the country to sell at a profit under the present system. Scarcely any business has been done direct with Spain, the duties being prohibitive; but English goods find their way still into the country through French houses, the treaties between Spain and France being favourable to the latter country.

The outlook for trade with the United States at the beginning of the year was exceedingly good, and large orders were to hand, and an excellent spring trade was done. The demand for winter goods also promised well, but financial troubles arose in the States, confidence was destroyed, trade began to fall off very considerably, and but few repeat orders came to hand. For the spring season of 1885 orders are very much lighter than they have been for the last few seasons, and prospects for the beginning of the year are anything but cheering; still it is believed that with restored confidence there will be as good a trade with the United States in 1885 as there was in 1883. Another disturbing element was the Presidential election, which always affects business as a general election does in this country. The Canadian trade also opened very well at the beginning of the year with orders for the present fall, and continued fairly well until some heavy failures in the cotton department of Canada occurred, these seriously affected some of the banks, created consternation, checked trade in woollens, and left merchants with large stocks. Consequently the demand for the ensuing spring and summer trade is likely to be small. Still an improvement is looked forward to for the next fall trade. The goods chiefly sent from here have been fine worsteds, solids and backed, and a few fancies of all kinds, with rather more sealskins than usual. There has been a very brisk demand for fancy woollens and worsted goods of the finest quality from the Brazils and the River Plate, chiefly through Paris houses. The Australian trade has been greatly below the average, owing to the low prices realised for corn and wool, and the drought and loss resulting to sheep-farmers, and owing also in Melbourne to the heavy tariff; besides which there has been such severe competition with German and Belgian goods that markets have been greatly overstocked, and large quantities of goods have been consigned to Australia for sale by auction. Through the unsettled state of affairs in South Africa there has been scarcely anything doing with the Cape. A good quantity of suitable woollens has been sent to India during the past year. The outlook for the present year is on the whole cheerful, from the simple fact that although trade has been generally dull in most of our national industries, the worsted and woollen trades have been above the average of former years; and should the trades, at present in a depressed condition, revive, an increased volume of business must bricken the cloth branches considerably. Manufacturers hold light stocks on the whole, and with the exception of some few, are fairly well employed; they are therefore sanguine of the future.

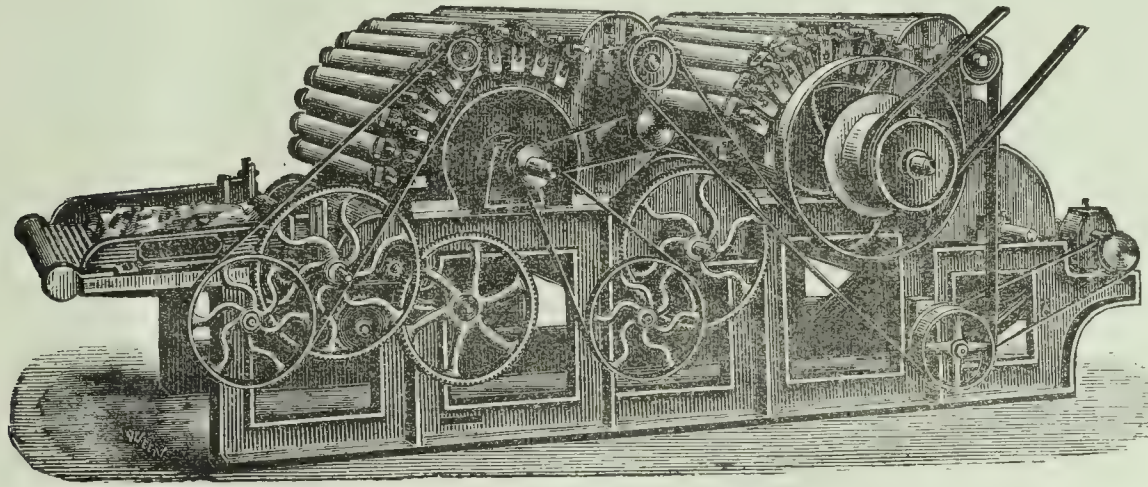
According to *Kemp's Mercantile Gazette*, the number of Failures in England and Wales gazetted during the four weeks ending Saturday, December 27th, was 332. The number in the corresponding four weeks of last year was 899, showing a decrease of 567, being a net decrease in 1884 of 6,486. The number of Bills of Sale published in England and Wales for the four weeks ending Saturday, December 27th, was 1,071. The number in the corresponding four weeks of last year was 1,021, showing an increase of 50, being a net decrease in 1884 of 882. The number published in Ireland for the same four weeks was 54. The number in the corresponding four weeks of last year was 55, showing a decrease of 1, being a net decrease in 1884 of 554.

MACHINE "GARNETT"

*For Opening Hard Twisted
Woollen and Worsted
Waste.*



*À ouvrir les laines fortement
frisees et les déchets
de laine.*



These Machines are guaranteed to be of the very best quality, both as regards material and workmanship, and possess many recent improvements.

We beg to announce that we have just obtained
ROYAL LETTERS PATENT

For improvements in these Machines, whereby we are now able to put 14, 16, and even 24 rows of teeth per inch on to the cylinders, whereas formerly we could not exceed 12 rows per inch.

Ces machines sont garanties de première qualité, sous le rapport du choix des matériaux et de la construction. Elles renferment plusieurs perfectionnements tout nouveaux.

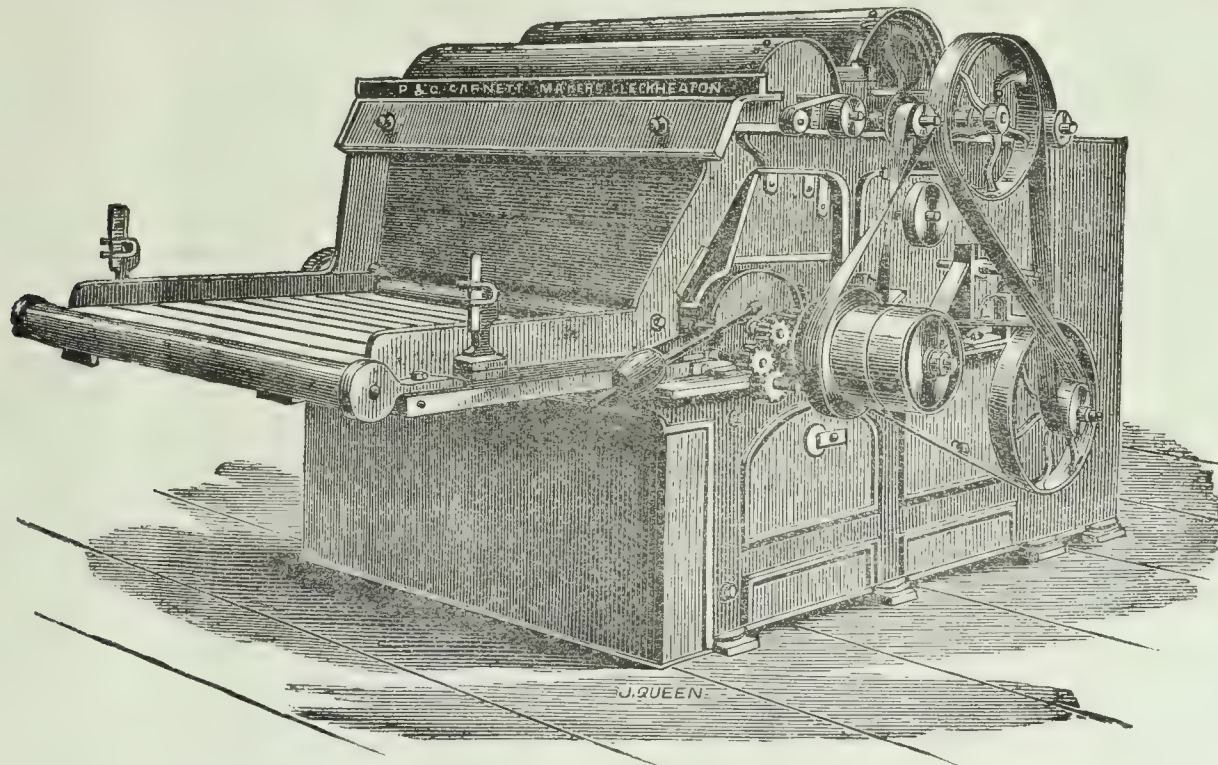
Nous venons d'obtenir
UN BREVET ANGLAIS

Pour un perfectionnement au moyen duquel nous pouvons placer 14, 16 et jusqu'à 24 rangs de dents au pouce sur les cylindres, tandis que jusqu'alors nous ne pouvions dépasser 12 rangs au pouce.

P. & C. GARNETT, SOLE PATENTEEES,
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Unequalled for fast Seed Cotton.

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L'EGRENOIR BREVETÉ DE GARNETT
Sans rival pour la préparation des cotons à graine dure.



**IMPROVED WOOL CLEANING AND BURRING
MACHINE,**

Capable of cleaning 1,500 lbs. to 1,600 lbs. of Wool per day. The very best and most economical machine for this purpose which has yet been introduced to the public. Also

GARNETT'S PATENT METALLIC CARD,

For covering burr rollers and breasts of carding engines for woollen and worsted, and
TAKERS-IN OF COTTON CARDING ENGINES.

From Mr. ROBERT PLATT.

Stalybridge, May 9th, 1877.

In answer to your inquiry of the 7th, I have had your patent Metallic Cord in use more than twenty years, and am very much pleased with the working of it. Its advantages are that it is much cleaner and less costly than leather or any other covering.

**LA MACHINE PERFECTIONNÉE À NETTOYER
ET ÉCHARDONNER LES LAINES,**

Pouvant nettoyer 1,500 à 1,600 livres de laine par jour. C'est la meilleure machine et la plus économique qui ait jamais été offerte pour cet emploi à l'industrie. Nous construisons aussi

**LES CARDES MÉTALLIQUES BREVETÉES
DE GARNETT,**

Pour garnir les alimenteurs, et poitrinières des cardes à laine et à laine peignée

LES BRISEURS DES CARDES À COTON.

Attestation de M. ROBERT PLATT.

Stalybridge, 9 Mai, 1877.

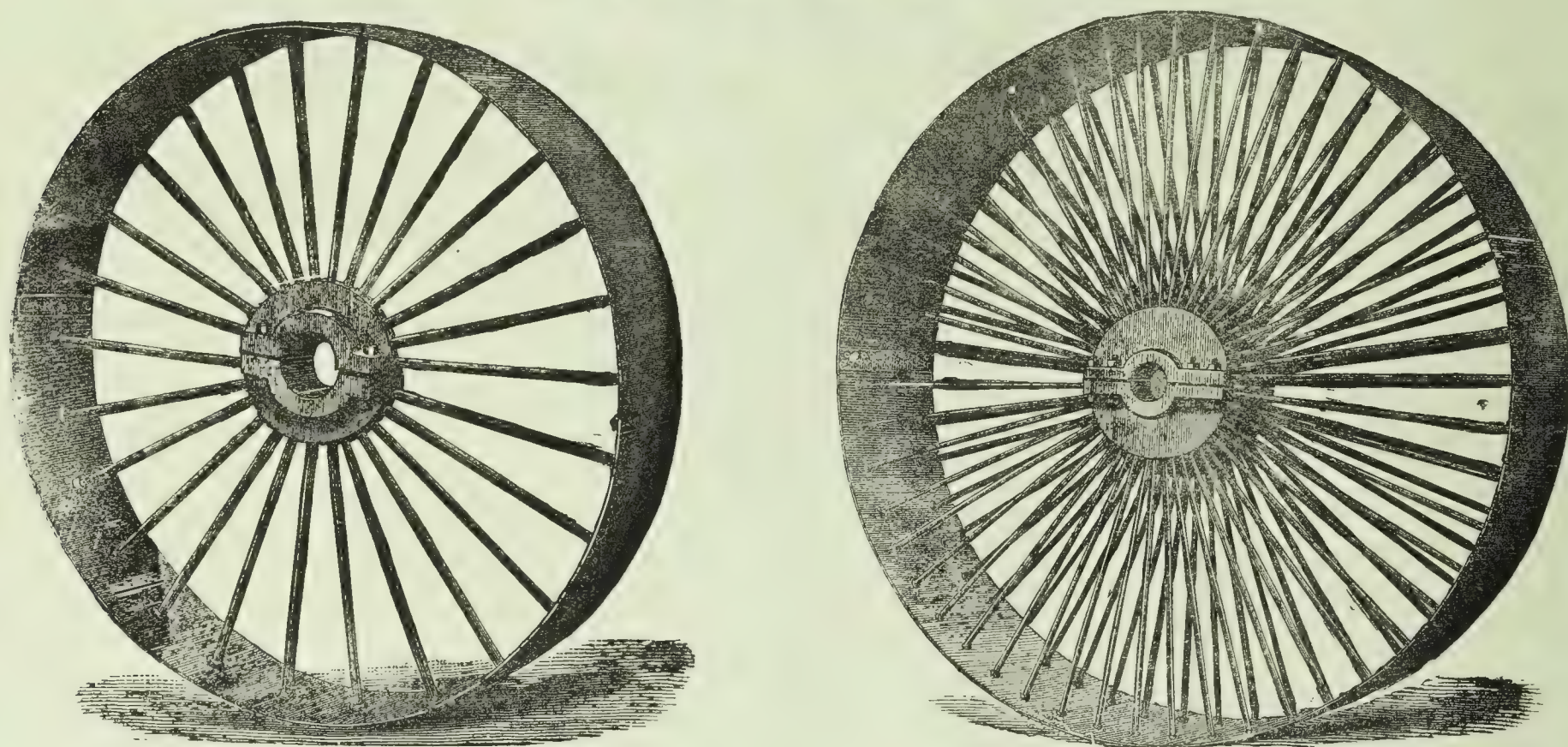
En réponse à votre lettre du 7 ct. j'emploie depuis plus de vingt ans votre système breveté de cardes métalliques et j'en suis très satisfait. Il possède l'avantage d'être beaucoup plus propre et moins cher que le cuir ou tout autre genre de garniture.

Agent—Mr. C. BORISSOW, Rue a Fiens, 3 ter. Lille, FRANCE.

RODGERS' PATENT WROUGHT IRON PULLEYS, SPLIT OR SOLID.

ALL SIZES FROM 6 INCHES UP TO 24 FEET DIAMETER.

Over 40,000 in use.



THE BEST PULLEY IN THE WORLD.

Wrought Iron THROUGHOUT, RIM, ARMS and BOSS.

THE ONLY WROUGHT IRON PULLEY MADE.

SOLE MAKERS—

HUDSWELL, CLARKE & Co.

RAILWAY FOUNDRY,

LEEDS, ENGLAND.

THE JOURNAL OF FABRICS AND TEXTILE INDUSTRIES.

12TH JANUARY, 1885.

DESIGNED BY W. TAIT.



TAPESTRY QUILT.

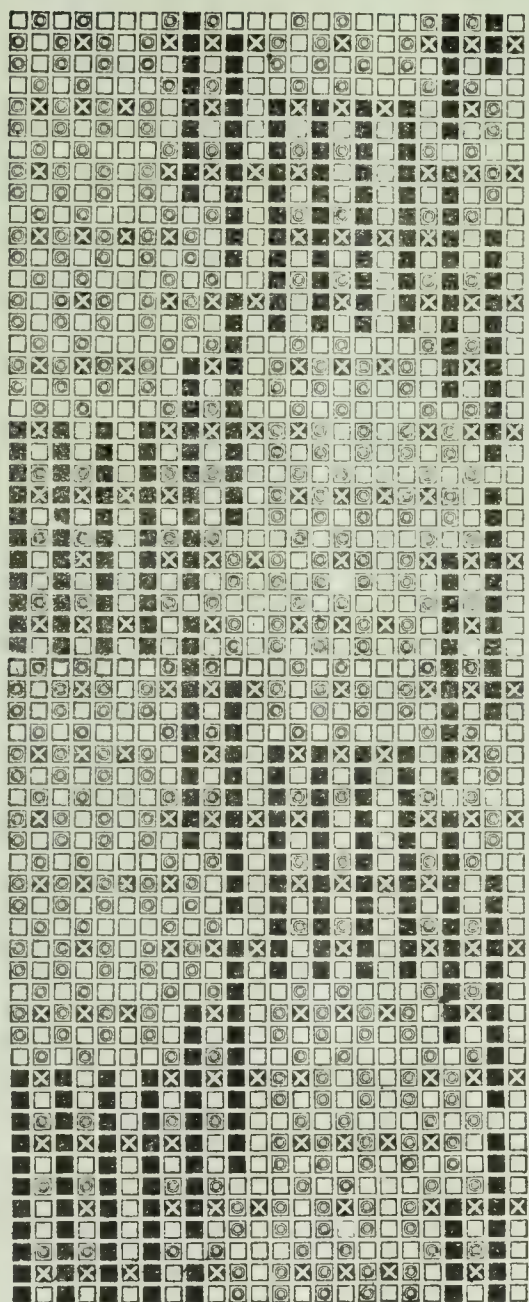


SILK DAMASK.

THE JOURNAL OF FABRICS AND TEXTILE INDUSTRIES.

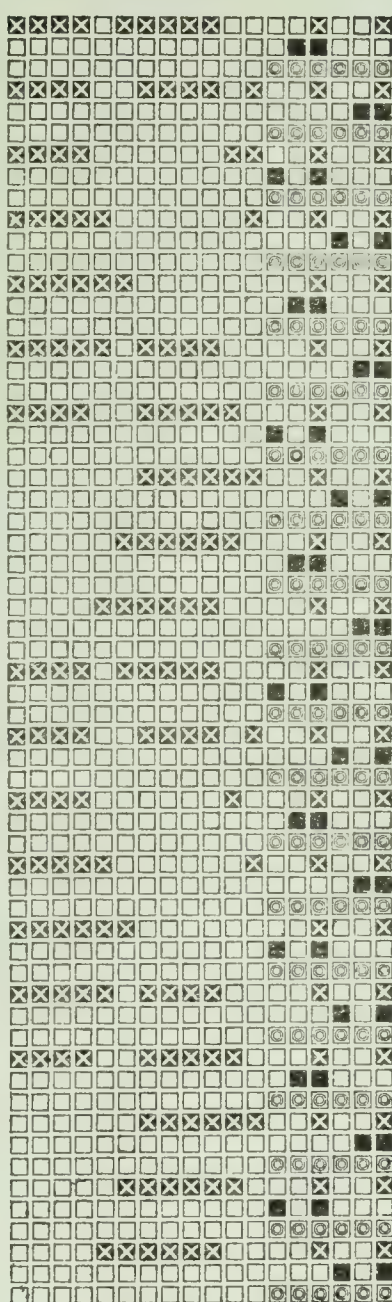
12TH JANUARY, 1885.

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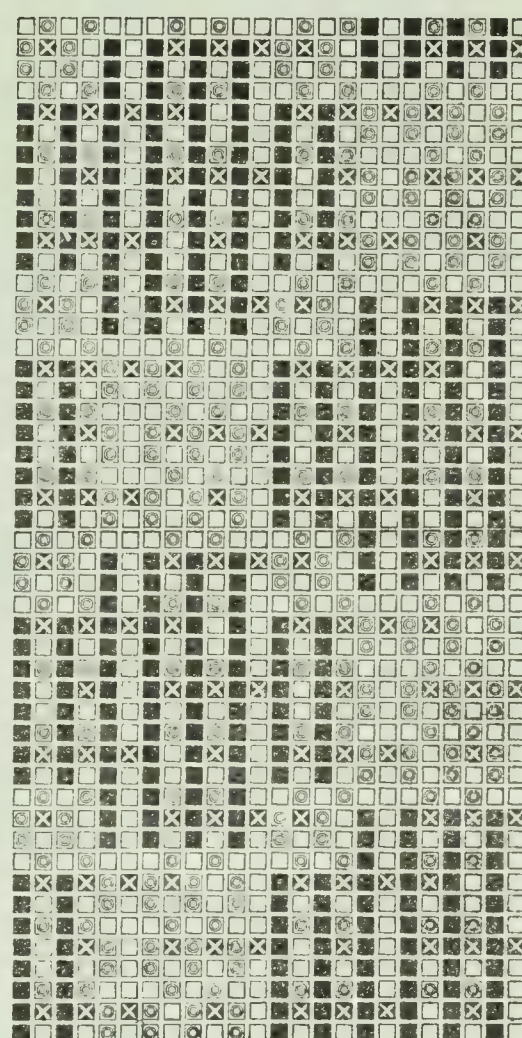
Design.

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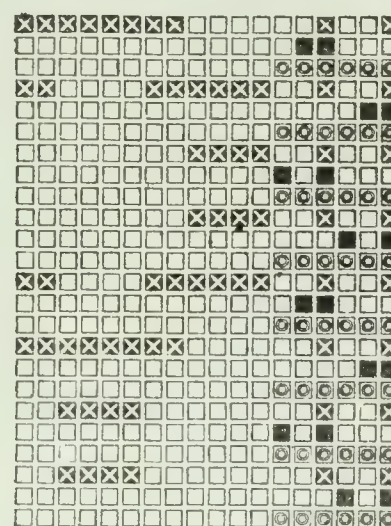
Pegging Plan.

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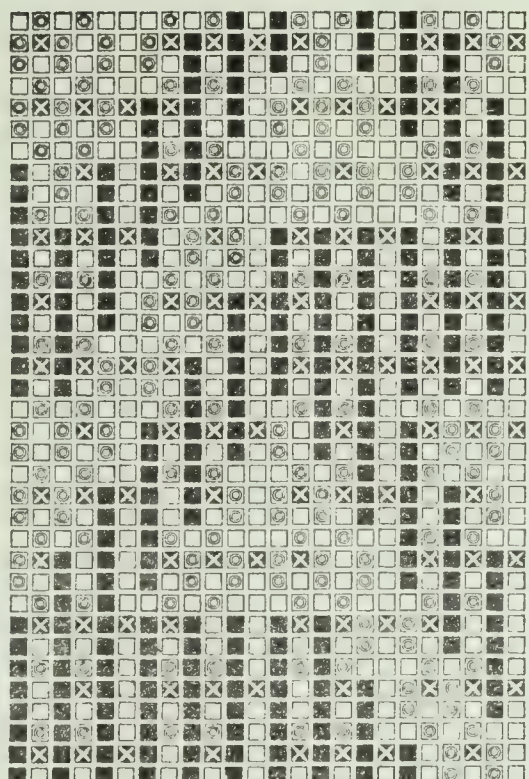
Design.

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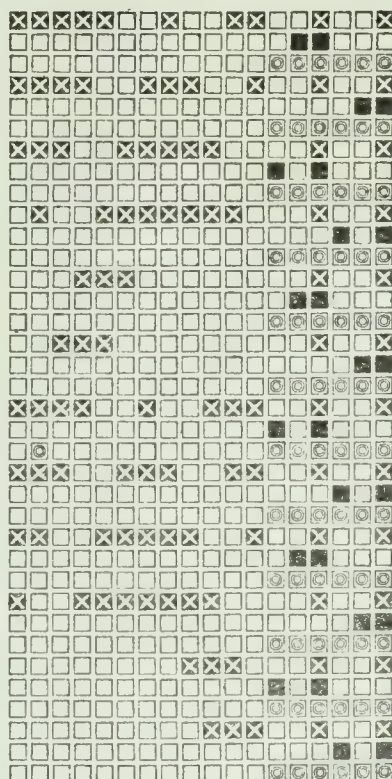
Pegging Plan.

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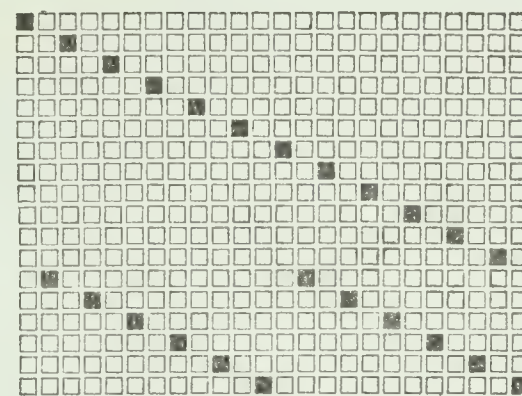


Design.

No. 256.



Pegging Plan.



Draft for Nos. 254, 255 and 256.



Figured Matelasse and Ottoman Cloths for Ladies' Wear.

A great demand has recently been experienced by manufacturers of matelasse, ottoman and soleil fabrics for most classes of these cloths, and for the figured makes this has been especially the case. Many manufacturers in the heavy woollen districts are taking advantage of this, and are producing cloths admirable in point of design, texture, and cheapness. As a numerous section of our readers are interested in this branch of textiles, we give six designs, three of which are for figured matalasse and three for ottomans. These if properly worked out, according to the particulars given, will produce fabrics which ought to meet the approval of weavers of these materials. The matalasse patterns, which are original, are very effective when woven, the mohair or lustre yarns used for the face adding greatly to their appearance. The ottoman cloths are also very effective, and manufacturers who take advantage of them are sure to be repaid for the labour involved. This class of material for ladies' wear has, during the past two or three years, been in great favour in the United Kingdom, and in some countries abroad, especially in the United States. With the latter country, our manufacturers have done a good trade, and the demand at the present time is, if any thing, increasing, and, judging by reliable reports, it is probable that there will be no falling off in this respect for some time to come. What they require at present is something similar in warp and weft (particulars of which we give) at a moderate price, which will be effective in design and general appearance, and at the same time be a good wearing material. These points should be borne in mind by manufacturers. The designs given in this number of our Journal combine these requirements in every respect.

Mantle Cloths.—Figured Matelasses.

For the Designs Nos. 254, 255 and 256, given on our third coloured sheet, particulars of warp, weft, &c., are as follows:—

Face warp 2/40 mohair or lustre worsted.
 Back „ 2/36 dyed Black cotton (Egyptian.)
 Face pick 2/40 „ „ „ „ „ „
 Fulling or wadding 4 skeins woollen.
 Back pick 7 „ „ „ „ „ „
 Straight over draft on 24 shafts.
 Face warp 3,480 ends or 60 ends per inch and 58 inches wide.
 Back „ 1,740 „ 30 „ „ „ „ „ „
 30 ends per inch.
 60 picks per inch.
 3 ends in a split.
 30's reed.
 54 inches wide when finished.

The face gear should have 2 face threads in each mail, and these must be divided in the slay, so that 2 threads, 1 each from two different shafts, may be in one split, thus having a cotton end or backing warp between them, thereby dividing every face thread in the warp, which will produce a very even piece.

Drawn 2 ends of worsted or mohair on 1 shaft.

1 end of Black cotton „ „

(See Plan.)

Wefted—1 Wadding.

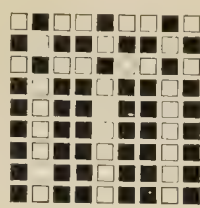
1 Backing.

1 Face.

3 picks.

Ladies' Mantles.—Ottomans and Soleils.

No. 257.



Pegging Plan.

Face warp 2/52 Botany worsted.

Back „ 2/40 Black cotton.

Face weft 2/40 „ „

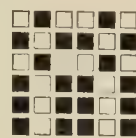
Backing 8 skeins woollen.

Drawn 1 worsted.

1 cotton.

1 worsted.

No. 258.



Pegging Plan.

60 picks per inch.

99 ends per inch.

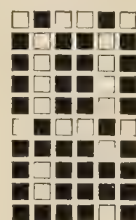
33's reed.

3 ends in each split.

60 or 58 inches wide in loom.

56 inches wide when finished.

No. 259.



Pegging Plan.

The above particulars are the same for
 Nos. 257, 258 and 259.

The Latest Patterns for Woollen, Worsted, and Mixed Cloths for Winter 1885-6, and Spring and Summer 1886.

During the past year, some ideas in designs, colourings, &c., for worsted, woollen, and mixed cloths for ensuing seasons have been given in our columns, and have met with the approbation of the numerous subscribers throughout the districts in which the above fabrics are being manufactured. The designs also, which have from month to month been issued in our Journals, have been of the latest construction and colouring, and judging by the praises of numbers of those interested, who have taken the trouble to weave these patterns, we have been successful in our endeavours to supply some of the wants of the cloth manufacturing public. Of course we have not been able to satisfy all branches of the industry, as that would be impossible, still, on the whole, our efforts have met with appreciation. In the future we hope still further to merit the patronage of subscribers by the excellency not only of the literary matter, but also of the designs inserted in the pages of our Journal. For the seasons, Autumn and Winter 1885-6, there are still some new and original patterns being manufactured; in point of design, colouring and texture they are of the highest excellence. Packets of these we have now on hand, and any of our subscribers may procure them from us, at the usual rate—£2 per 100 samples, and they may have their requirements met by simply stating, as nearly as possible, the style and texture of the samples required. They combine the latest ideas of French, English, and German, &c., manufactures, and faithfully represent the fashionable materials for the seasons named. For Spring and Summer 1886, some admirable samples are now before us, which represent, to a great extent, the fashionable cloths for above seasons. In the finer classes of goods, smaller effects in stripes, checks, &c., will be introduced, the tendency being, as regards colouring, to brighter hues than during the past seasons. Silk will be used, both for dotted and running effects, in a rather larger proportion than in recent patterns. In the medium and lower qualities of fabrics, brighter colouring is likely to meet the public taste. In our next issue full particulars of the latest ideas will be given, and shortly we hope to have packets of these samples on hand, for which we shall be pleased to receive orders from manufacturers, &c., at the above-named price.

The formation of a Textile Institute for the furtherance of the interests of the textile trades in this country is proposed, and a preliminary meeting is to be held on the 19th inst. at Bradford.

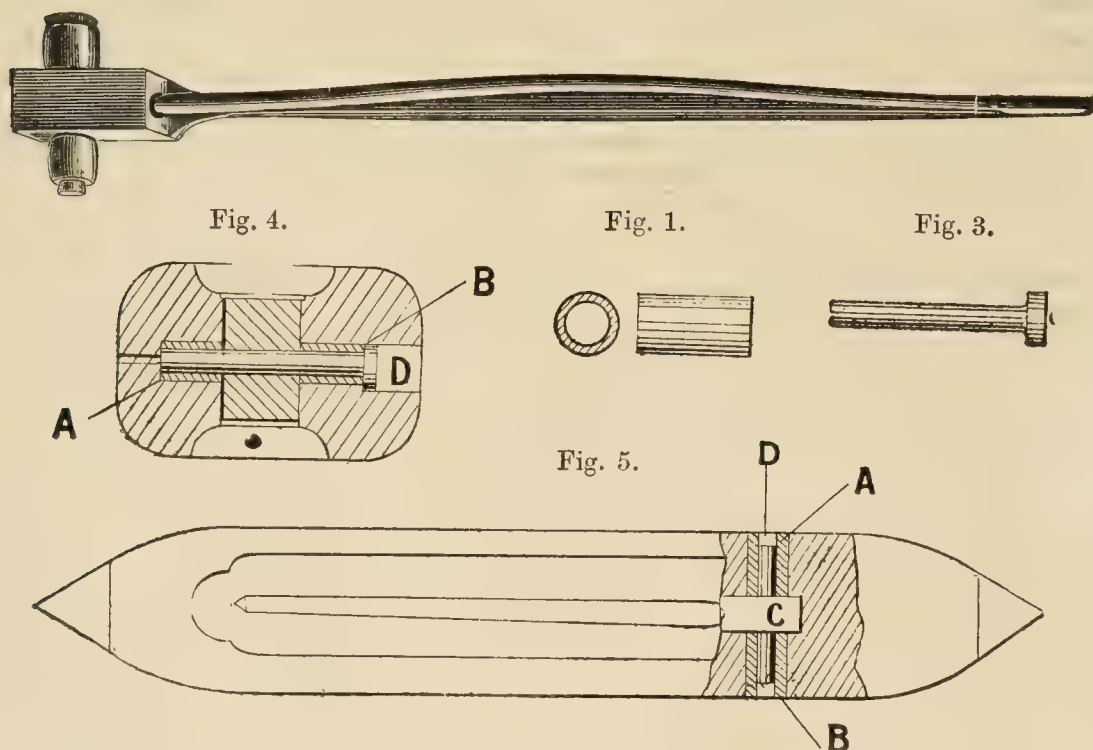


MACHINERY, TOOLS, &c.

Earnshaw's Improved Shuttle.

A patent has recently been granted to Mr. J. Earnshaw, of Cornholme, Todmorden, for an improved shuttle for looms. The invention relates particularly to the part of the shuttle known as the tongue or spindle—which carries the cop—and for fixing the same in the shuttle in the most durable manner. Before describing the invention, we will briefly allude to the method now in use for accomplishing the above purpose. As at present attached to the shuttle, one extremity is fitted upon a fixed pin transverse to the slot of the shuttle, and upon which the spindle freely works so as to be rotated for the purpose of placing the cop on the spindle, it is retained in its normal position by means of a spring. The part where the tongue is fitted on the pin in the shuttle is recessed to receive the extremity of the spindle, and it is well known that, by constant use in rotating the spindle, the sides of the shuttle which are in contact with the extremity of the tongue, easily wear, thus creating a vacancy between the spindle and the shuttle at that part, which causes an unsteadiness of the spindle when the shuttle is working. This invention has for its object the prevention of any irregular oscillation or instability of the spindle when working. To effect this, two hollow bushes of steel or other similar metal—Fig. 1—are

Fig. 2.



fitted tightly one in each side of the shuttle. The pin (instead of allowing the spindle to rotate upon it), is fixed to the spindle, and it works firmly between the bushes, and keeps it in a rigid condition whatever the oscillation or vibration of the shuttle may be. Fig. 2 shows the spindle, A B being the bushes which are fitted into the sides of the shuttle, it will be obvious that the end of the spindle C, owing to the manner in which it is held by the bushes, has its vibration reduced to a minimum. The bushes are fitted in the inside of the aperture of the shuttle, and in consequence it is almost an impossibility for them to work out of their position. Fig. 3 shows one kind of pin which is fixed to the spindle, and Fig. 4 is a plan of the fixing. A B being the bushes, and D the pin, which is inserted from one side only of the shuttle; this, to a great extent, prevents the tendency to work out. Fig. 5 is a full view of the shuttle. The advantages secured by its use are many; its economical properties are very apparent; the breaking of the yarn in its passage from the cop on the spindle is obviated, therefore there is much less waste of material, and the loss of time resulting from frequent stoppages of the loom through breakages is reduced to a minimum. The shuttle is already commanding a large sale, owing to the above advantages, and seems likely to meet with increased favour.

Effect of Gas on Cotton Goods.

At the last meeting of the Chemical Section of the Philosophical Society, of Glasgow, Dr. William Wallace, gas examiner and public analyst for the city of Glasgow, read a short paper on the destruction of the colour of cotton goods by the sulphur in the gas burned in the London warehouses. Sulphuric acid, he said, was found in considerable quantity in the goods after being some time exposed, while the same articles in the fresh condition were quite free from that acid. In some cases the cotton fibre itself was rendered so tender as

to be perfectly useless. The same thing had been observed in the warehouses in several large towns in England, such as Leeds, Manchester, &c., where common coal, containing much sulphur, was used as the source of the gas supplied to the consumers, but only to a limited extent. The remedy which was recommended by Dr. Wallace was the thorough ventilation of the warehouses so as to insure that the sulphurous and sulphuric acids generated by the burning of the gas might have a sufficiently free escape into the atmosphere. He also suggested the free use of lime for whitewashing the walls of the warehouses, so that the acid vapours floating in the more or less confined air might combine with the lime. He exhibited a number of specimens of the goods which he had examined after they had been sent back by the London merchants, as damaged, to the manufacturers. Both in colour and in strength they were seen to have suffered detriment by exposure to gaseous fumes.

Foreign Tariffs and English Industry.

In the address delivered by Professor Thorold Rogers, M.P., on the effects of foreign tariffs on English industry, the lecturer instanced the often cited case of a foreigner—say, Mr. Krupp, of Essen—underselling the English producer in another foreign market, being able to do this by charging more to the German consumer, and thus making up the loss of foreign contracts. The German manufacturers are at present masters of the situation, owing to the protection they enjoy under prohibited tariffs, at the expense of the home consumers. We say “at present,” for there are signs of a reaction, if not of a crisis, when German users will begin to see that they have been made dupes of all along. There are one or two other passages in Professor Rogers’ address which deserve attention. It is quite true, as he observes, that no situation is without its compensations, and that, while as a vendor a Free Trade country is at a disadvantage, as a purchaser it has a distinct advantage. England as a Free Trade country is able to procure goods from foreign countries on better terms than those countries where protection exists, but as vendors the people of this country are a little limited. There is really no remedy but the gradual enlightenment of foreign nations, the remonstrance which intelligence is sure to bring, and the sense of unwisdom, which repeated remonstrance is sure to develop in the minds of those who are so seriously injuring themselves, for a protective tariff is always, though insensibly, a burden. In concluding, Professor Rogers said that it did not seem to him that we in England could do ourselves any good, but infinitely greater harm, by any attempt at retaliation. We do not get all the benefits we should get if the rest of mankind were intelligent; but we do get a good many benefits, and we should get only constant and accumulating losses if we abandoned our Free Trade policy. We trust that the latter alternative will never be adopted. That day would be an evil one for British industry on which we entered upon a “war of tariffs,” for there is no knowing where it would end.

Braid Making at Bradford.

Braid-making is, in the future, to be a feature in the practical work of the textile department of the Technical College at Bradford. A special class is to be formed to study this subject, in conjunction with the principle of the structure of fabrics. During the past term a numerous class has been at work studying the latter subject, with most gratifying results, the work done consisting chiefly of original research for determining the relations of warp and weft in producing cloths of the best type. Manufacturers will at once recognise the importance of this kind of work, and when coupled with this there is the introduction of the braid manufacture, for which thousands of pounds worth of yarn are exported from Bradford every month, it is not too much to anticipate that the work done in the classes will have an important influence upon the industries of the district.

The Velvet Industry.

This industry has grown to a prominence of which nobody had an idea twenty years ago; Germany especially has been successful. Crefeld, Elberfeld, and Milheim are the centres of the industry, which enables working people to earn good wages, and has enriched a number of manufacturers. France imports from eight to nine million francs of velvet from Crefeld annually, which place enjoys the monopoly of making Schappe-velvets. Swiss manufacturers have commenced to make velvets with the intention of seriously competing with Germany. Although the German velvets have been introduced everywhere, the finer qualities cannot be compared with the Lyons goods, which was amply demonstrated at the exhibition at Amsterdam. L. Audibert and Co., in Lyons, exhibited velvets which German makers have not been able to manufacture; for example, a piece of all silk velvet (warp and filling) of 54 inches width, while the broadest German products were only 22 inches wide. Of the 20,000 power looms in France, 4,000 are being used for velvets; Switzerland has 400 and Crefeld 1,000 velvet power looms. But in the German province of the Rhine we find 18,000 hand velvet looms, mostly employed on figured goods. Boys and girls fourteen years of age are working on medium quality figured goods, which contain from 600 to 2,500 threads. The designing and punching of cards is also done by the weavers. From four to five pieces are made on a loom, from two to three in a width, and one on top of the other. This quality of velvets sells at two to five marks (four marks a dollar); better qualities of plain and all the figured velvets are made on hand looms, also plushes. The weavers of Crefeld are paid $1\frac{1}{2}$ to 2 marks ($37\frac{1}{2}$ cents. to 50 cents.) for a metre plain, $4\frac{1}{2}$ to 5 marks (1.12 $\frac{1}{2}$ dol. to 1.25 dol.) for a metre figured velvet, which enables them to earn from 12 to 20 marks per week (3.00 dols. to 5.00 dols.) Germany exports to France $6\frac{1}{2}$ million marks, to England 20 millions, and to the United States 15 million marks, silks and velvets. Germany consumes about 15 million marks. Thus the total production amounts to from 58 to 60 million marks, or 15 million dollars.

Trade in France.

In its report report at the close of December the *Jacquard* says that business in Elbeuf woollen fabrics continues difficult. Some revival is reported from Sedan; an additional number of buyers have been present in the market, and though their purchases have not been large in any single instance, they have covered a considerable variety of goods. At Roubaix report says that the trade of that centre and of Tourcoing has been less favoured this winter than last, and as regards certain branches, particularly the combing and spinning branches, increased depression during the current and following months is considered not improbable. The industries which consume chiefly the finer wools of Australia and the River Plate are specially suffering just now. These descriptions are being to some extent replaced by strong and dry wools employed in the production of commoner goods. Irish wools are also more in demand for bright fabrics, such as alpacas, mohairs, orleans, &c. The Alsatian yarns, which were very much in demand last year, have been totally neglected this winter. Business has not been important even as regards the descriptions mentioned as coming more into demand. Stock taking has begun, and the stock taking period is always a quiet one; but this year the quietness is excessive. The improved demand for carpets and woollen cloths in the department of the Oise lately observed has not been maintained. Reports from Belgium say that at Verviers orders for carded wools have become more and more rare, and producers have much difficulty in keeping down stocks. Night-work has been discontinued in some of the mills, and the hours of labour per day have also been reduced. Spinners of fancy yarns, especially, are feeling the depression; and the Scotch demand for mixed coloured yarns is said to have fallen off in a marked manner. Germany has also been buying less freely than formerly. The demand for combed yarns of Belgian production has, however, it is stated, expanded, and in several establishments the hours of labour have been increased; orders on both home and foreign account continue to arrive. As regards piece goods, the winter season is

proving as unsatisfactory as its immediate predecessors. In Austria mild weather has diminished demand for woollen goods, and as holders are desirous of disposing of their wools, prices have again been reduced. The export trade to the Danube and Balkans is moderate, and is restricted to common and cheap goods.

Accidents in Putting on Belts.

A writer in a mechanical paper, discoursing on accidents from running machinery, makes the following pertinent remark as to a preventable class of accidents:—"One great fault, and one that causes numerous accidents with many workmen, is the manner in which they attempt to put on belts while pulleys are under motion. More people get caught in belting by attempting to do this than in any other way. I have seen men on a ladder trying to put on a 10-inch belt running at high speed, crowding the belt against the pulley, and burning it as well as their hands, and finally having to give it up as a failure; then they had the speed decreased and the belt was put on without any trouble. I think that they never calculated how fast they would have to move the belt to get it on easily. There is nothing that agitates my nervous system more than to see some one attempt to put on a belt standing on the wrong side of the pulley. He stands no chance of getting the belt on, and a good chance of being caught and wound up around the shaft. The right place is to stand on the opposite side of the belt, putting it on as it travels toward you. Having a good foundation to stand on, take the belt in hand and lead on to the pulley, moving the hand as fast as the pulley travels. This is the whole secret. I have seen a little fellow who understood this principle go to a large belt that three men were tugging at, and easily put it on the pulley at first trial."

International Inventions Exhibition.

With a view to ensure the better protection of patented inventions to be exhibited next year at South Kensington, the Board of Trade have granted an additional certificate for the period from March 1 to May 1, the time during which the exhibits will be received and arranged. A previous certificate, dated August last, enabled exhibitors to secure protection for their inventions from May 1, the day of the opening of the exhibition. An exhibitor desiring to avail himself of this method of protecting his invention will have to comply with certain conditions of the Patents Act, 1883—that is to say, he must, before exhibiting, give the comptroller notice of his intention, and pay a fee of 10s. This notice must be accompanied by a brief description of the invention. After these conditions have been complied with, the exhibition of the invention does not prejudice the right of the inventor to obtain a patent for it, provided the application be made before or within six months from the date of the opening of the exhibition. A copy of the extracts from the Act bearing on this subject may be obtained on application to the Secretary, International Inventions Exhibition.

State of Trade in the United States.

A summary is published by *Bradstreet's* (New York) of the statements it has received from 4,000 correspondents in various parts of the United States in respect of the state of trade. The correspondents are scattered through twenty-two States, chiefly in the north, which contain nine-tenths of all the industrial employes in the Union according to the census of 1880. The summary is of a very discouraging character, inasmuch as it gives precision to the vague statements which have been afloat for some time of hardships among the wage-earning classes. Of the entire number 316,000, or 13 per cent., are without work; while among certain trades the per centage of distress is higher—namely, among ironworkers, 20 per cent.; glassworkers, 19 per cent.; persons engaged in the tobacco manufacture, 17 per cent.; in the wool trade, 16 per cent.; in the leather trade, 14 per cent.; in the cotton trade, 12 per cent. The strikers, to the number of 17,550, have had their wages reduced 25 per cent. The depression was probably never greater, while at the same time the feeling is more hopeful, perhaps more so than the facts warrant.

The Spanish Tariff.

It seems to have been too readily taken for granted that the commercial agreement between the British and Spanish Governments will be sanctioned by the Spanish Parliament. The fact is that the manufacturers of Catalonia, who are a wealthy body of men, and do not readily give way on questions affecting their own interests, will oppose the agreement on the ground of protection for their own manufactures of cloth and cotton. In Catalonia and about Barcelona, the capital, there are a great number of cotton and cloth mills. The people are of the hard-headed German type, and are quite different from the easy-going people of the northern districts. Numerically the representation of the manufacturers in the Cortes is not large, but the influence and action of wealth in a poor country go a long way. The Catalonians will urge that a remission of the very heavy duty now imposed on goods of British manufacture will enable the British manufacturer to compete with them in their own markets. They will urge that the admission into England of Spanish wines of 30 degrees at the shilling duty, instead of 26 degrees, as at present, is not sufficient compensation. Producers of the stronger wines are indifferent on the subject; so, too, are the agricultural and mining classes. It is therefore highly probable that the Catalonians, who have already commenced an agitation against the agreement, will be able to resist it, as they have done before. Even should it be adopted, vexatious municipal regulations are certain to be brought into play against its action.

The Lace Trade in 1884.

Lace manufacturers are not likely to lament the year 1884, especially in Nottingham, where business generally has ruled dull from January to December, prices having receded to a lower level than has been known for some years. Not only so, but the tendency of the trade to develop itself in new centres, especially in Glasgow and the neighbouring district, has deprived Nottingham manufacturers of many orders which would otherwise probably have been booked by them. The continued production of lace machinery, not for local use but designed either for other parts of the kingdom or for export, is not suggestive, moreover, of an immediate improvement of trade at headquarters. The greatest depression has been experienced in the millinery lace branch, in which Nottingham has been for some time completely beaten by the producers of Germany and Switzerland, and the fact that there is still an active export trade being carried on in fine bobbin nets, indicates that at present there is no chance of a falling off in the supply of the foreign laces, of which these nets form the groundwork. As the nets are made for the most part in the west of England or at Derby, the trade of Nottingham is very little benefited by the demand. As regards the silk department, Chantilly flouncings have met with some favour, but trade generally has been quiet. The manufacturers of lace curtains complain much of Scotch competition; and it is a fact that the Scotch houses have successfully competed for the American market. Plain nets generally have ruled quiet throughout the year. The principal novelty which has been introduced has been the manufacture of laces with coloured threads, and these have met with a fair amount of success. Preparations are already being made to renew this speciality.

Vegetable Textile Fibres.

Developments are being constantly made in the attempts to utilise fibrous vegetation for textile purposes. They seem to engage the attention of all manufacturing communities, and in which Government aid has been called into requisition. Mexico has awakened to the value of its many natural fibres, and the State of Yucatan has lately issued a decree offering a reward of \$20,000 to the person who will furnish, within three years, a machine for the decortication of a vegetable fibre known by the name of henequen. The machine must be automatic, and not dependent on skillful and experienced workmen. This is nearly the sum offered by the British Government, as a premium, for a machine that is capable of extracting the ramie

fibre. This is one of the instances which lead a person to think of the difficulties to surmount in the mechanical separation of such kinds of fibre. Large rewards have not yet brought into existence a machine that will accomplish the desired result to perfection. There have been machines invented possessing valuable features, but we know of no one that has been classified as superior, or within the limit of the conditions affecting the premiums. The United States Consul at Rouen, France, in his late report to the State Department on China-grass manufactures, mentions a newly invented machine for the disintegration of the ramie fibre in its green state, and speaks of it as having most interesting features. The name of the inventor of this machine is given as Berthet. The manufacture of China-grass is becoming quite an industry in Rouen; and the products of the Jacquard loom attest to its value in many elegant appearing tissues.

Export of Textiles to France.

A Parliamentary return, showing the value of cotton, silk, and woollen yarns and manufactures exported respectively from the United Kingdom and France, with the totals for the years 1849, 1859, 1869, 1879, 1880, 1881, 1882, and 1883 has been issued. It was ordered by the House of Commons on the 6th ultimo, on the motion of Mr. Sidney Buxton. For the United Kingdom the total exports of cotton, linen, hemp, jute, and other vegetable fibres, silk, woollen, and worsted yarns were—1849, £8,644,909; 1859, £14,424,356; 1869, £23,242,560; 1879, £17,792,005; 1880, £17,141,496; 1881, £18,701,193; 1882, £18,408,564; and 1883, £18,808,832. Of manufactured goods from the same articles the totals are—For 1849, £31,706,250; 1859, £56,984,560; 1869, £84,343,798; 1879, £76,861,747; 1880, £91,049,791; 1881, £94,827,238; 1882, £92,751,662; and 1883, £91,619,058. The French returns are for yarns as classified above—In 1849, £498,325; 1859, £1,356,510; 1869, £2,925,956; 1879, £3,543,008; 1880, £3,546,689; 1881, £3,532,089; 1882, £3,987,047; and 1883, £3,433,818. Of manufactured goods from similar materials—For 1849, £15,590,035; 1859, £30,526,189; 1869, £32,278,528; 1879, £25,022,603; 1880, £28,559,406; 1881, £28,782,812; 1882, £32,578,362; and 1883, £31,355,364.

Indian Cotton Mills.

The cotton spinning and weaving industries continue to expand in India, the growth during the year ending June 30th last being something considerable. This industry is almost purely the result of native enterprise, and it is chiefly confined to Bombay. Thus in the whole of India there are 81 mills, with a capital of £5,722,570 (reckoning the rupee at 1s. 8d.), and employing 62,836 hands, of which 61 mills, with a capital of £4,543,440, and employing 45,564 hands, are in Bombay. Outside of Bombay there are only 20 mills, distributed as follows:—1 in the Central Provinces, 1 at Hyderabad (Deccan), 6 in Bengal, 3 in the North-West provinces, and 9 in Madras. In fact, the Bombay mills initiated the industry, and have well held their own. The following table, taken from the *Times of India*, giving full particulars for Bombay during the past ten years, is of interest. It will be seen that the consumption of cotton has doubled in the last seven years.

STATEMENT OF COTTON MILLS IN THE BOMBAY PRESIDENCY.

Years Ending 30th June.	No. of Mills Working and in Course of Erection.	No. of Spindles.	No. of Looms.	Cotton Consumed in Cwts.
1884	61 ..	1,540,879 ..	14,299 ..	1,454,425
1883	51 ..	1,345,042 ..	13,616 ..	1,232,812
1882	49 ..	1,237,536 ..	13,046 ..	1,102,255
1881	42 ..	1,158,510 ..	12,310 ..	1,061,242
1880	42 ..	1,151,280 ..	12,212 ..	900,928
1879	42 ..	1,147,310 ..	12,311 ..	741,104
1878	42 ..	1,095,162 ..	10,631 ..	794,430
1877	41 ..	1,043,944 ..	9,291 ..	not known
1876	40 ..	963,981 ..	8,681 ..	—
1875	40 ..	886,098 ..	8,537 ..	—

Goods for the Chinese Markets.

The French consul at Hamburg reports that an exhibition of goods intended for export to China has been held at Altona, the different articles of which it consists having been purchased in the district by the German Consul at Canton in order to familiarize the makers and exporters with the quality, shape, dimensions, and mode of packing goods destined for the Chinese market. These different products have already been exhibited at Stettin, Posen, Magdeburg, Halle, and Flensburg, and are shortly to be exhibited at Hanover. An explanatory catalogue has been printed to show the colours, the brands, and the mode of folding the stuffs which find most favour in China, as the native buyers are very particular as to whether a piece of goods is done up in blue or red paper, and as to whether it is fastened with a white or black piece of string, whilst the slightest variation in the mode of packing excites suspicion. One German house has obtained an exceptional position in the Spanish stripes trade by delivering goods exactly to the taste of the Chinese, who pay that house a higher price for goods only 60 in. wide than they do to other houses for similar goods 72 in. in width. The exhibition comprises cloth, woollen goods, cottons, flannel, bed coverlets, shirtings, drills, socks and stockings, umbrellas, soap, perfumes, liqueurs, caudles, condensed milk, butter, biscuits, sweetmeats, sardines, table salt, looking glasses, aniline dyes, needles, clocks, &c. All these goods are of second quality, and are evidently intended to be sold among the poorer classes, but the trade is not on that account likely to be the less remunerative.

ODDS AND ENDS.

A Montreal *Star* correspondent who is with the Canadian voyageurs under General Wolseley on the Nile, writing from Luxor, on the Nile in Upper Egypt, says: "We arrived at Esneh on the 18th, and coaled again. The town is noted for its cotton dyeing industry, and yards upon yards of this material, dyed indigo blue, are to be seen spread out to dry from tops of houses, and flopping to the breeze across streets and squares." It would be interesting to know when indigo cotton dyeing was first commenced in this ancient Egyptian town. It must have been long before it came into use in Europe, and yet, evidently, no improvement has been made either in the process of dyeing or drying.

It is a very common annoyance for belts to run off from one side of the pulley. This is usually caused by:—1. One or both of the pulleys being more or less conical, when the belt runs to the high side. The only remedy for this is to cut down and true up the face of the pulley. 2. Frequently the shafting is out of the true, or parallel and in line. In this case the belts run off at the side where the shafting makes the nearest approach together. The obvious remedy is to set out the hangers or journals at one end, or to set them in at the other until they are parallel. This may be ascertained by placing sharp tacks or pins in a long strip of light wood, fitting them into the centres of the shafts at both ends, and observing how much they differ.

For the jute trade the year has proved a very dull and disappointing one, and those engaged in this important branch have not reaped the profits which they have usually derived from it. For the last year or two there has been a gradual increase in the production of both yarns and cloth, not that many new mills and factories have been erected, but additions have been made to those already working. The erection of new works on the Continent, and especially the extensions at Calcutta, have, however, been the chief cause of the present depression. The results of these concerns show that they are not being worked to any advantage, and as they have been forced to seek markets for their own productions, which have hitherto been supplied from Dundee, the competition has forced down prices to an unprofitable point.

The bills introduced by the different railway companies for the classification and revision of rates are now published. They deal, the *Standard* says, with an immense number of articles; but the general result all round is an increase of rates as well as the legalisation of charges for terminals. The Great Northern Railway, for example, proposes to raise its maximum rate from 3½d. per ton per mile to 5d., with an additional sum for the cost of stations and expenses incurred at stations. The maximum rate on the London and South-Western is to be raised from 3d. to 5d., and on the London, Chatham and Dover Railway from 4d. to 5d. The rates for cattle are also to be considerably increased. Steps will be taken at once to direct the attention of the leading commercial and agricultural bodies in the country to these bills, and to organise a strong opposition to them in the House of Commons.

THE GAZETTE.

Adjudications of Bankruptcy.

Scarborough, John, G. Scarborough, T. S. Scarborough, and Joseph Scarborough, Trafalgar Mills, Halifax, Yorkshire, worsted spinners and manufacturers.

Walters, W., 17, Portland Street, Halifax, Yorkshire, woolstapler.

Dividends.

Bratby, F., Carrington, Nottingham, lace maker; 1s. 5½d. (first and final), Official Receiver's Offices, Exchange Walk, Nottingham.

Cockhill, J., jun., 29, Market Street, Huddersfield, Yorkshire, woollen manufacturer; first and final dividend of 2s. 0½d. in the pound, at the offices of Messrs. Armitage, Clough and Company, 23, John William Street, Huddersfield.

Edwards, F., Devonshire Street, Carlisle, woollen merchant; 8s., offices of Messrs. R. Mackay and Co., Chartered Accountants, Royal Exchange, Middlesborough.

Hague, T., Nottingham, hosiery maker; 8s. 6½d., Official Receiver's Office, Exchange Walk, Nottingham.

Phillips, G., 27, Lever Street, Manchester, flannel merchant; 2s. 10½d., Official Receiver's Offices, Bridge Street, Manchester.

Spurge, W. J. and H. Triggs, 48, Friday Street, London, warehousemen; third and final dividend of 2½d. in the pound, at the offices of Messrs. Boyes and Child, Chartered Accountants, 42, Poultry, London.

Stean, E. Bird Street, Coventry, Warwickshire, trimming manufacturer; 5s. (composition), Official Receiver's Office, 46, Jordan Well, Coventry.

Bills of Sale.

	£	s	d.
Armitage, W., 3, Oxford Road, Dewsbury, wool merchant	300	0	0
Brinton, A. H., Walton Bridge Cottage, Shepperton, carpet agent	160	0	0
Scout Button Spinning Company (Limited), Wood Mill, Scout, near Newchurch, cotton spinners (mortgage)	5,950	0	0
Taylor, J., Gooden Lane, Heywood, cotton spinner	4660	0	0 col.

Dissolutions of Partnership.

Ashby, W., S. Price, G. Kirk, B. Kirk, and A. Trivett, Nottingham, lace manufacturers.

Fletcher, W., R. Fletcher, L. Bradshaw, and R. E. Brydon, Spider Mill, Water Lane, Radcliffe, Lancashire, manufacturers of coloured goods.

Hartley, T., and J. G. Roper, Low Fold Mills, Leeds, Yorkshire, wool merchants.

Home, E. S., and D. H. Hewitt, 5, New Bond Street, London, woollen merchants.

Pugh, J., D. S. Davies, and W. Bradley, 3, Back Piccadilly, Manchester, warehousemen.

Rawson, J. B. and E. G. O'Connor, 1, Star Court, Bread Street, London, manufacturer's agents and merchants.

Rhodes, C. and W. L. Dash, Abbey Park Road, Leicester, trading as the Abbey Park Spinning Company.

PATENTS.

Applications for Letters Patent.

Actuating dabbing brushes for combing machines. O. B. Lister and H. Batty, London	5th Dec. 16,013
Apparatus in spinning mules. W. Hurst, London	6th Dec. 16,065
Apparatus for making double looped bands. W. K. Blackburn, London	23rd Dec. 16,838
Belts or ropes for driving grooved wheels or pulleys. S. Rowbottom, London	29th Nov. 15,742
Bobbins for spinning, doubling, and twisting fibres and manufacturing said bobbins. C. H. Pugh, London	2nd Dec. 15,847
Brake for looms. T. Norton and J. H. Hellewell, Leeds	11th Dec. 16,272
Bobbin-winding machinery. J. H. Sykes, Huddersfield	12th Dec. 16,352
Bleaching fabrics and yarns. W. Mather, Manchester	19th Dec. 16,663
Bleaching powder. J. Burnett, London	20th Dec. 16,763
Cutting and sawing cloth, &c. G. J. Hill, Manchester	28th Nov. 15,708
Cutting pile of cotton or other cords. F. Osbourn and J. H. Beresford, Manchester	1st Dec. 15,787
Cylinders or rolls for drying, calendering, and finishing textile fabrics, &c. J. A. and J. Hopkinson, London	1st Dec. 15,819
Card-strippers. G. and E. Ashworth, Manchester	4th Dec. 15,935
Cop-rail for mule spinning. J. Jackson, Manchester	10th Dec. 16,208
Cutting fustian cords, &c., by self-acting machinery. J. and T. and J. Marshall, and J. Pickles, and T. Hargreaves, Todmorden	10th Dec. 16,233
Card-clothing. J. Moseley, Manchester	11th Dec. 16,264
Copying paper or linen, or paper or linen used for writing or drawing on, to obtain a duplicate. F. Rust, Liverpool	16th Dec. 16,517
Chenille and apparatus therefor. J. Hood, London	16th Dec. 16,549

Checking or arresting the motion of shuttles for certain classes of quick running looms. J. Smith, G. Roebuck and J. Hirst, London	17th Dec. 16,590
Carding engines. T. Garside and T. and J. Taylor, Manchester	19th Dec. 16,658
Calcium chloride for bleaching powder, &c. W. S. Richardson and W. J. Grey, Gateshead-on-Tyne	20th Dec. 16,717
Driving the spindles of machinery for spinning and doubling fibres. S. Littlewood, Halifax	28th Nov. 15,678
Doubling frames. W. S. Barlow and F. W. Broadbent, Manchester	29th Nov. 15,731
Decorticating ramie, jute, and the like. S. Pitt, London. A communication	2nd Dec. 15,837
Driving straps and belting. W. and J. and J. E. Sutcliffe, London	2nd Dec. 15,836
Driving belts or straps. E. P. Alexander, London. A communication	4th Dec. 15,958
Dyeing woollen, worsted, &c., black. W. N. Fieldhouse, London	15th Dec. 16,474
Disinfecting fibrous materials, &c. S. W. Parker and A. Blackman, London	16th Dec. 16,539
Fustian cutting frame. J. Worthington, Manchester	5th Dec. 15,993
Feeding fibre into scribbling, carding and like preparing machines. M. Oldroyd, Halifax	8th Dec. 16,103
Fulling or milling machinery. M. and T. Kirby, Leeds	16th Dec. 16,508
Gig mills for finishing woven fabrics. C. E. Moser, Halifax	22nd Dec. 16,801
Index machines or dobbies for looms. J. E. Wadsworth, Manchester	22nd Dec. 16,733
Jacks or apparatus for ensuring differential motion on slubbing and roving frames. S. Tweedale, Halifax	29th Nov. 15,720
Jacquard machines or dobbies of looms. T. Taylor and M. Whittle, Manchester	29th Nov. 15,724
Letting-off motions of looms. T. H. Brigg, London	29th Nov. 15,771
Let-off mechanism for looms. H. J. Haddan, London. A communication	2nd Dec. 15,853
Locking and unlocking the reeds of looms for weaving. C. Catlow, Halifax	3rd Dec. 15,881
Lubricators. J. H. Kidd, Manchester	4th Dec. 15,933
Lubricators. F. H. J. Trier, Westminster and M. Pletts, Peckham	5th Dec. 16,010
Loom-stop rods and bearings, applicable also to heald shafts of looms. A. P. Dickinson, Halifax	6th Dec. 16,052
Looms for looped or pile fabrics. T. Norton and J. H. Helliwell, Leeds	11th Dec. 16,271
Looms. J. and J. Nightingale, London	13th Dec. 16,390
Looms. A. Taylor, Manchester	13th Dec. 16,393
Looms for ornamental fabrics. A. McNab, Glasgow	13th Dec. 16,395
Loom temples. T. Blezard and W. Nelson, Halifax	15th Dec. 16,446
Lubricating shafts. T. Reisert, Augsburg	18th Dec. 16,628
Looms. M. Carrigan, London	19th Dec. 16,708
Looms. J. Gregson, Preston	22nd Dec. 16,782
Loose pulleys for shafts. H. J. Haddan, London. A communication	23rd Dec. 16,837
Machinery for brushing cut pile fabrics, such as velvet, velveteens and cordings. F. Barker, Manchester	3rd Dec. 15,885
Measuring and cutting fabrics. J. Krockaert, London	15th Dec. 16,492
Ornamental fabric for window blinds. F. Sternby, Manchester	6th Dec. 16,039
Oil-can, oil-feeders, oil reservoirs, and lubricators. C. Phillips, Birmingham	17th Dec. 16,571
Operating the dabbing brush of Noble's combing machine. A. Muff, Halifax	17th Dec. 16,575
Picker spindle studs and shuttle boxes of looms. T. Duerden and W. Heaton, Halifax	29th Nov. 15,721
Preparing wool and other fibrous substances to be combed. P. O'Hara, London	2nd Dec. 15,834
Preparing, spinning and doubling cotton, &c. J. W. Dawson and H. Simpson, Manchester	3rd Dec. 15,870
Picking sticks for overpicked looms. J. Holding and J. H. Wilson, London	12th Dec. 16,341
Rings and anti-ballooning rings for spinning and doubling fibres. E. Tweedale, Halifax	29th Nov. 15,722
Rendering cloth, &c., waterproof. N. A. Alexanderson, Stockholm	3rd Dec. 15,923
Rugs and mats. J. France, London	6th Dec. 16,073
Roving and spinning frames. A. and J. Holmes, Halifax	10th Dec. 16,202
Rope driving gear. J. Wainwright and G. H. Richmond, Manchester	16th Dec. 16,503
Reeds for looms. E. Haydock, Halifax	23rd Dec. 16,824
Steam lubricators. J. S. Miller, London	29th Nov. 15,747
Shedding and change shuttle motions used in looms. W. H. Hacking, Manchester	3rd Dec. 15,868
Spinning machinery. H. Tetlow, J. Holroyd, and W. Tetlow, Manchester	3rd Dec. 15,873
Shedding motion of looms. J. Hardwick, London	3rd Dec. 15,906
Shedding motions, box motions, and picking motions of looms. F. Leeming, Halifax	5th Dec. 15,979
Sizing machines. A. P. Dickinson, Manchester	15th Dec. 16,385

Shedding motions for looms. T. Richmond, H. Haworth, and D. Whitehead, London	18th Dec. 16,620
Spinning mules. W. Griffiths, J. Rushworth, and R. Ratcliffe, London	19th Dec. 16,683
Shuttles and bobbins. T. and C. L. Tweedale, Manchester	20th Dec. 16,723
Twist lace fabrics. T. S. Birkin, London	1st Dec. 15,787
Taking-up motion in looms. J. W. Hall and B. Cooper, Manchester	8th Dec. 16,094
Towels or other woven fabrics for absorbent purposes of the toilet, &c. J. P. Strangman, London	11th Dec. 16,287
Twizzles or guide wires for twisting yarn. J. Stell, London	12th Dec. 16,356
Using perforated steel or other guide bars in a warp lace machine. H. Hill, London	28th Nov. 15,657
Warp lace machines. A. Dawson, and E. Smith, London	12th Dec. 16,322
Warp lace machines. J. Hudson and J. Jardine, London	16th Dec. 16,543
Weaving cords. J. E. Newton and J. E. Harrison, Manchester	19th Dec. 16,664
Warp-sizing machines. J. S. and J. Sutcliffe, Manchester	27th Dec. 16,936
Yarns and machinery therefor. W. C. Whitehead and L. J. Crossley, London	4th Dec. 15,957

Patents on which the Seventh Year's Renewal Fee of £10 has been paid.

Self stopping beaming machines. E. Tweedale, Accrington	11th Dec., 1877.	4,708
Condenser spools or bobbins for woollen or other yarns. J. Kay, Rochdale	19th Dec., 1877.	4,827
Cutting chenille cloth. R. N. Havers and R. G. Geach	14th Dec., 1877.	4,755
Opening, cleaning and scutching cotton, &c. W. R. Lake, London. A communication	1st Jan., 1878.	2
Spinning. F. A. Greenwood, Bradford	27th Dec., 1877.	4,912
Drying and steaming fabrics. J. Smith, Thornliebank	28th Dec., 1877.	4,917

Patents on which the Stamp Duty of £100 has been paid

Looms. R. L. Hattersley and J. Hill, Keighley, and J. Walker, Ashton-under-Lyne	28th Nov.	4,483
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Patents on which the Fourth Year's Renewal Fee of £10 has been paid.

Looms. W. Adam, Kidderminster	22nd Jan., 1881.	291
Stop motion for spreading and drawing frames. A. T. Lawson and S. Dear, Leeds	6th Jan., 1881.	70
Weaving apparatus. G. H. Hodgson, Bradford	6th Jan., 1881.	68

Patents Sealed.

435	1,741	1,855	7,266	486	4,804	11,438
11,793	611	1,232	1,602	1,963	7,137	10,926
11,532	227	484	493	813	12,034	567
1,287	56	1,053	1,103	1,996	4,920	11,951
12,397	504	539	8,775			

Complete Specifications Accepted.

2,191	2,546	3,445	3,556	3,678	5,615	12,986
2,713	3,083	3,615	3,747	3,760	3,816	3,826
3,907	5,838	6,747	14,544	1,422	1,691	1,784
2,425	2,426	2,775	3,280	3,461	3,499	3,790
4,006	4,562	4,566	5,060	5,231	5,470	10,941
13,131	14,462	2,424	3,803	4,241	4,248	2,134
2,993	4,180	4,326	4,676	10,241	919	1,145
2,449	4,480	6,760	6,973	6,974	15,171	1,300
2,410	3,337	3,630	4,018	4,694	4,707	5,432
5,910	987	1,270	4,449	4,499	4,501	4,839
5,404	15,665					

Provisional Specifications Accepted.

11,785	12,083	13,208	13,273	13,274	13,839	13,901
14,117	14,160	14,725	14,962	15,131	15,136	11,860
12,394	13,177	13,893	13,929	14,174	14,220	14,326
14,459	14,950	15,125	15,195	15,245	15,279	14,475
14,607	14,731	14,806	14,832	14,985	15,031	15,258
15,327	15,330	15,344	15,420	15,472	14,162	14,739
15,337	15,381	15,457	15,563	15,611	15,649	15,657
15,678	15,720	15,722	15,724	13,491	13,587	14,022
14,066	14,434	15,621	15,725	15,787	15,847	15,868
15,870	15,881	14,228	14,250	14,332	14,949	15,091
15,585	15,721	15,731	15,785	15,885	15,935	15,957
15,958	16,073	13,710	15,257	15,411	16,065	16,158
16,166	16,180	8,046	10,099	14,327	14,425	14,627
15,388	15,837	15,873	16,208	16,264	16,271	16,272
16,289	16,322	16,341	16,352	16,385	16,395	

The Journal of Fabrics

AND

Textile Industries.

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Notices.

The Half-Yearly Subscription—payable in advance—including home postage, is 3s. 6d., Cheques and Post Office-Orders to be made payable to H. & R. T. LORD, 10, Ann Place, Little Horton Lane, Bradford, Yorkshire.

The Publishers will be happy to receive intimations of New Inventions, Patents, &c. The Publishers are open to receive from Designers Original Designs of Carpets, Damasks, Tapestries, Linen, Cretonnes, &c., and such as are accepted will be published with the Designer's name affixed. All Designs sent for approval must be 10 inches long by 7 inches wide for single page, and for double page, 16 inches by 10 inches, and must be accompanied by Postage Stamps sufficient to pay return. Postage in case they are rejected.

Literary communications must, in all cases, be accompanied by the names and addresses of the writers, not necessarily for publication, but as evidence of authenticity.

Authors are requested to retain copies of their manuscripts; rejected manuscripts cannot be returned.

To prevent any misunderstanding, all Articles sent to the *Journal of Fabrics and Textile Industries* for publication will be considered as offered *gratuitously*, unless it is stated explicitly that remuneration is expected.

Readers are invited to forward items of interest to the Trades concerned.

The Proprietors will feel greatly obliged if any of their readers, in making enquiries of, or opening accounts with, Advertisers in this paper, will kindly mention the *Journal of Fabrics and Textile Industries* as the source from whence they obtained their information.



Proposed Technical Institute for Great Britain.



MEETING was held at the Technical College, Bradford, on the 19th of last month, to consider the advisability of forming a Textile Institute for Great Britain. Many of the leading firms in the district were represented. Mr. Swire Smith occupied the chair, and having briefly explained the object of the meeting, called upon Mr. Ashenhurst, the head master of the Technical School, Bradford, to state

the aims of the proposed institution. He said that the fundamental object of the institute would be the promotion of the scientific and technical advancement of the processes involved in the manufacture and finishing of textile fabrics by means of researches, comparative tests, and particularly by holding meetings for the reading and discussion of papers upon all subjects pertaining to the textile industries. To aid this object prizes and scholarships might be awarded for improvements in textile producing machinery, and chemical and art material used in the finishing and ornamentation of textile fabrics. Among other objects would be the institution of lectures on all subjects of interest to the fellows of the institute; the appointment of committees to decide on the merits of newly-invented textile machinery submitted to them, and thus save individual manufacturers from expending money on machinery based on erroneous principles or otherwise imperfect; the retention of the services of competent persons to report on the fashions; the establishment in the large textile manufacturing centres in Great Britain of associated branches of the institute to consider the

staple textile industries of their locality; the publication of a journal of the institute's proceedings, which should contain illustrated reports of the meetings, not only of the institute, but of its branches, as well as abstracts of those portions of the proceedings of all English and foreign societies and publications relating to the textile industries, so that British manufacturers might be fully posted up in all that relates to their particular industry. A museum would be founded on a similar basis to that belonging to the society at Mulhouse, containing samples of raw textile materials and finished fabrics from various parts of the world, as well as samples of engineering, chemical and art materials, &c., used in the textile industries. It was proposed that the arrangement of the general meetings of the institute should be similar to that adopted by the Iron and Steel Institute, each annual general meeting being held in one of the large textile manufacturing centres in Great Britain and abroad, by which manufacturers should be enabled to judge of the various methods of manufacture adopted, and to discuss them in situ. All questions relating to wages and trade regulations would be rigidly excluded. A branch of the institute might be formed to consider means for preventing accidents by machinery. The institute would thus embrace the best features of the four great technical societies, viz., the Institution of Civil Engineers, the Iron and Steel Institute, the Society of Chemical Industries, and the Société Industrielle de Mulhouse. By this concentration and unity of the talent and experience of textile manufacturers, and those engaged in the allied industries, results would follow which would make the Textile Institute one of the noblest and most useful of the institutions of the land. Mr. Thwaite said it was expected that Mr. John Slagg, M.P., also one of the Commissioners on Technical Education, would have attended this meeting, but he had written to say that as he would be en route for Egypt at the time of the meeting he could not, unfortunately, be present. He cordially agreed with the project for forming the Textile Institute, and promised to do all he could to support it, adding that the objection that some manufacturers hold to communicate their ideas to each other was a mistake, and one which ought to be overcome. Sir Joseph Lee, of the firm of Tootal, Broadhurst, and Lee, of Manchester, and Dr. Watts, also wrote approving of the Institute. The *raison d'être*, continued Mr. Thwaite, for such an institution as that proposed, was acknowledged to be complete by all those who had seen the immense impetus given to the development of new improvements in the processes involved in the manufacture of iron and steel, and who knew that such impetus was distinctly traceable to the educational influence of that metallurgical school of experience, the Iron and Steel Institute. The same beneficial effect would doubtless have been, or would be, felt in the chemical industries by the establishment of their representative technical society. The society at Mulhouse, chiefly textile, had been of immense value to the Alsatian manufacturers. Seeing that these technical societies had proved of such immense benefit to the industries they represent, it might be logically contended that the British textile industries, which together occupied in point of magnitude the premier position of the world's industries, would also benefit to the same, if not to a greater extent. After some remarks by other gentlemen, the Chairman said it seemed to him that there were certain things that were felt to be wanted in that neighbourhood, and it might be proper to state that most of those wants might be fully supplied with the machinery that was already in operation in the town. They had in Bradford associations of a character which were intended to promote objects similar to those specified, and those associations were very complete in their way. There was, in the first place, the Technical College, the scope of which was not necessarily confined to the classes or subjects advertised. The college was as wide-spread in its aims as any society could well be. It seemed to him that the proposed institute would be practically a union of several societies which already existed, and there was always a danger of multiplying organisations for certain ends, and thus dividing the objects in view by frittering away their time and labour on a number of things. In Bradford they had the Technical College, the Chamber of Commerce, the Mechanics' Institute, the Church Institute, the Dyers' Society, and numerous organisations of working men. After further discussion, it was determined that a committee of ten gentlemen should be formed to take steps towards the formation of an institute on the lines proposed.

Nottingham and the Swiss Embroidery Machine.

IN the future, near or far, when the dream of the Socialist has been fulfilled, and we have an uninterrupted round of "eight hours' work, eight hours' play, eight hours' sleep, and eight 'bob' a day," the historian upon whom it devolves to chronicle the existing state of affairs, with its flows of prosperity and plenty, and its ebbs of depression and scarcity, will have much trouble in analysing the causes generally, and in the case of the Nottingham lace trade the difficulty will be greatly increased. Most people who have considered and spoken or written upon the subject have a theory of their own to advance, and are prepared to support it by a host of arguments more or less cogent. Each idea has been noticed and considered from time to time in these columns, and with all deference to the superior and special knowledge of those who take a different view, we have declared in favour of the reason assigned, that it is entirely owing to fashion, and that when fashion changes, and not till then, the Nottingham trade will again be brisk. A Nottingham manufacturer, who was asked recently for his opinion on the subject, emphatically declared that in his view the depression was not owing either to foreign competition, with all its attendant advantage in the shape of cheap labour, nor was it due to trade restrictions which some manufacturers complain of so bitterly. He said anybody who cared to take a turn up the Long Row might see for him or herself the reason. "Here," he said, "even in Nottingham, where lace is one of the staple trades, and we are all very directly interested in it, the ladies are wearing feathers, flowers, ribbons, and everything but lace, which is not in fashion; and, no matter how novel and beautiful are the designs produced, or how tasteful and cheap the fabric, people don't want it on any terms." The result everybody knows, and it is no breach of confidence to state that there are about 900 lace-makers unemployed, and who are receiving out-of-work money (7s a week) from the society, exclusive of the considerable number in receipt of "strike pay" on account of the unhappy disputes at Long Eaton and nearer home. It should not be forgotten, either, that the production has greatly increased of late years, and that what was not over production in a good trade would speedily assume that form when, in consequence of a change of fashion, the demand decreased. Looking around, both at home and abroad, it is clear that all the manufacturing nations of the world are alike passing through a wave of depression, and, considered from many points of view, Nottingham has been exceptionally fortunate in the matter of degree. It is not the skilled workmen, either "twist hands" or "stockingers," who are represented to be on the verge of want in our midst, and for whom extraordinary provision is being made either by the municipal or the poor law authorities, but the labourers and others connected with the building and kindred trades, who were attracted to Nottingham by the special requirements of the time when in the Meadows, at Radford, at Hyson Green, and at Basford, houses were being run up, not here and there, nor even in blocks, but in hundreds. There are few persons who take the extreme view that the lace trade is permanently on the decline in Nottingham. There is a consensus of opinion amongst manufacturers and operatives alike that the tide will sooner or later turn, and that when it does, Nottingham will enjoy a season of prosperity such as it has never previously seen. The only question, perhaps, is whether capital and enterprise should rest for a time, except in preparing for that period; and, as factories and machinery are still being built, there has been no want of spirit in this direction, considering that nobody knows what will next find favour, and cannot make other than general preparation. But, in the midst of all the dulness, there has been one class of lace goods which has continued in brisk demand, and to which a good deal of the slackness in Nottingham is undoubtedly owing. The Swiss and Germans bought plain nets in the Nottingham market, embroidered it on a primitive machine, and returning it under the name of "Eidelweiss," practically put the lace produced on the Levers machine out of the market. This made bad worse, and Nottingham manufacturers, with practically unlimited capital, and enterprise which has never been questioned, had to consider whether they should not embark in this new branch of the lace trade, and, as they could not dictate to the consumer, supply the demand. Numbers of manufacturers and machine builders, for it affected the latter almost, if not quite, as much as the former, spent weeks on the Continent investigating for themselves. But they generally reported that the embroidering machine was a very primitive piece of mechanism, unlikely either permanently or even for any long period to supersede the Levers machine and the beautiful fabric which it produces, and that, therefore, it would not be a wise speculation on their part to embark in the business. This seems to have been a great mistake, although there is a story current to the effect that even a greater mistake was made at an earlier stage in the history of the embroidering machine. The original embroidery machine in use in the Swiss cantons and in Saxony has already been described in these columns as a horizontal sewing machine, which the operative works by turning a wheel and makes the pattern by hand, having the draught sheet stuck in front of her, like an instrumental

musician has his music. Some, if not all the Nottingham people who went to see the machine, returned with the impression that the motive power and regulation of the pattern had to act in unison to such a degree, the hand and foot keeping time, that it would be impracticable to apply steam power for the hand of the operative, or a jacquard for the draught sheet and eye and hand or foot of the workwoman. Otherwise they generally recognised that it would be wise to add "Eidelweiss" as a branch of the Nottingham trade, believing that with the plain net made in and around Nottingham, and Nottingham girls being sure to make apt pupils at working the machines, they would be able to compete successfully with both the Germans and Swiss. As to the capabilities of the machine, and the time during which Eidelweiss would have a run, they seem to have entirely miscalculated. The demand for the embroidered lace has continued brisk for something like three years, and is now only limited by the supply. The machine has been so improved that steam power has been successfully applied, and an attempt has been made to apply the "jacquard," or mechanical pattern-maker of the Levers machine, which, if it cannot yet be declared a success, has yet within it a probability of succeeding.

A story is told with regard to the improved embroidering machine which, if it can be moderately authenticated, ought to take its place among the curiosities of inventions. It is said that it was the invention of a Nottingham machinist, who offered it to a Nottingham manufacturer or machine-holder, or both, but had it declined, and that in disgust he took it to Switzerland, where it was not only thankfully accepted, but made the most of. Be that as it may, it is roughly estimated that in Switzerland there are about 800 machines at work embroidering Nottingham plain net, and finding constant employment, at what are good wages for the Continent, for about 3000 young women. Beyond that, machine builders are at work and doing a brisk trade in producing the improved embroiderer, at Arbon, on the banks of the Lake of Constance, at Winterthur, and at Fraunfeld. Each machine employs three young women, one in front to mind the needles and put up the threads, a second behind to attend to the shuttles, and a third at the end, where, in the ordinary Levers machine, the jacquard stands, to work the pantograph which regulates the pattern. Then, although much more complete when it leaves the machine than the piece when it leaves the Levers machine, it still requires some clipping and finishing, and for that purpose additional hands are required. It will be understood that the machines are worked exclusively by female labour, and that in no part of the process is a man at all required. In Switzerland the wages of the operatives vary from 6s. to 20s. a-week. The girl who attends to the pantograph is the chief, and receives from 15s. to 20s. a-week, the girl in front has from 10s. to 14s., and the girl behind, who has the simplest task, from 6s. to 8s. a-week. The working of the machine is simplicity itself, as is shown by the fact that a girl in Nottingham was found competent to work the pantograph three weeks after she had first seen the machine. The task of designing is very simple, and the only draughting required is to enlarge the design six times as a guide for the girl who works the pantograph. Very little power is required to work the machine, and it stands in about the same space as an ordinary Levers machine. It is contended by those who favour the idea of making Eidelweiss a branch of the Nottingham trade, that into whatever retail house any one may go seven-eighths of Eidelweiss lace will be found as against one-eighth of Nottingham, and that the demand and sale are in the same proportion. It is said, with regard to the embroidering machine, that, to begin with, it has to work on a very much better groundwork, plain net, than the Levers machine can make. The machine is represented to be in its primitive state, and while it is admitted that the same varied and fine effects cannot be obtained upon it at present, it is insisted that it is capable of very great improvement, and that it is possible, if not probable, that if it is amplified in anything like the same degree as the Levers machine has been, as many and varied effects may be obtained as in the present Levers machine. Already, as has been indicated, great improvements have been effected, and winding machines have been perfected, almost automatic in their action. It is not anticipated by those who have devoted a good deal of time and attention to the study of the subject, that the Eidelweiss will supersede Nottingham lace, although, chiefly owing to its comparative novelty, it has for the past two or three years successfully competed with it, and still continues to do so. There is great difference of opinion as to the comparative merits of the two products. Nottingham people—who may be prejudiced—contend that the lace produced on the Levers machine is a far finer product than anything which the embroidering machine has or can in its present state produce; while others—who may be designated by saying that they have no sentimental feeling in the matter—insist that in the perfection of groundwork and the beauty of design and effect of the embroidery, Eidelweiss far surpasses anything Nottingham has or can produce. But in a matter of business or trade that is not the question. The business of the manufacturer and of the operative is to produce that which is not necessarily the best, but that which sells. The most artistic designs, the most perfect fabrics, have not always enjoyed the largest share of popular favour. Sir Robert Peel is credited with having said that the aim of the British merchant was to buy in the cheapest market and sell in the dearest. So the British manufacturer, whatever may be his own tastes and fancies, if he would succeed, is bound to produce first what will sell.—*Nottingham Midland Express*.



Ornamentation of Textiles.

(Continued from Page 3.)



PARISET, the famous author of the "History of Silk," tell us that the Chinese Emperors reserved silk for the magnates of the empire. We know they were very careful to keep the manufacture of it to themselves; not only did the Emperors manage the manipulation of this precious thread, but they had it manufactured under the roofs of their palaces. We have it from the very best authorities that, when the Celestial empire was split up into so many feudal states, all the courts of the empire vied with each other which could have the most magnificent and most gorgeous costumes, and each state engaged and employed the best workmen and the most skilful artisans to be found, such as thoroughly understood the working of silk. The Chinese people are quite devoted to their precious thread; when the Emperor Chun was traversing his extensive dominions, and had arrived at the foot of mount Tai, where he received the homage of his vassals, these dependents presented to him such articles as were most likely to please him, the presents included silk and woollen fabrics, raw silk, and fabrics of many colours. The Emperor, Le Wang wore robes of extreme splendour, made from silk and gold brocade; this Emperor was an enthusiast on the subject, having silk manufactured in his palace. The Chinese had, nevertheless, worn this costly thread some three hundred years before the Empress Si Ling Chi discovered how to give it its full gloss, lustre, and brilliancy. It is very astonishing that we have no record of any silk having been found among the ruins, or in the tombs, of ancient Egypt; the absence of this fabric leads to the belief that the silk mentioned in the books of Genesis, Proverbs, and Ezekiel, must have been a material derived from some worm, other than the Chinese true silk worm. The anecdotes relating how silk first found its way out of China, and ceased to be the monopoly of its very careful protectors, are not only curious, but of a most interesting character, shewing how diligently the liberator of this sacred material must have planned and studied to free from bondage an article which was welcomed by all the nations of the globe, and which had been watched and guarded with all the care of its jealous country. According to a Chinese legend, a certain king of Khotan obtained the Emperor of China's daughter in marriage; when the Chinese Princess was departing from her native country for her new home, she was much tempted to take some of the costly material with her; but how was she to take it unperceived, how take this much valued substance to which her native country owed so much of its wealth, its magnificent and glittering costumes? Like all others of her sex, she was full of contrivance and deep thought, and at last she hit upon the device to take the germ of this precious little worm from its native home; it occurred to her to conceal these small particles in her head dress, for who would dare to lay rude hands on her fair locks? Procopius tells us that it was not till about the middle of the sixth century that the true silk worm eggs were found within the walls of Byzantium. Some Greek monks lived a long time among the Chinese evangelizing certain Indian regions; during the time they learnt the whole process of breeding, rearing and hatching the eggs of the silk worm, and, no doubt, gained some knowledge of the manufacture of the thread into a fabric; when these devout men returned to their own country, they, also, were unable to resist the allurements of this precious article, and they contrived to have secretly and skilfully concealed in their walking sticks or bamboo canes a quantity of the eggs of the insect. When they arrived at home, they made it their duty to explain to Justinian the real value and use of their secret treasure, and for their endeavours and the attainment of their efforts, Justinian rewarded them very handsomely. The products of these eggs, having thus found their way beyond the frontiers of China, were very quickly distributed over Asia Minor and Greece, and it was not long before the secret penetrated Persia, and then found its way into Italy, and later into the West of Europe, and it was thus that a valuable commodity, which had so long been the exclusive monopoly of China, became the source of gain to other enterprising nations. The Grecians and Romans were at periods given to great excesses and extravagance in their costumes and modes of decoration and ornamentation; they wore robes of brilliant colours, and garments of extremely skilful workmanship. Plutarch tells us of Demetrius, surnamed Poliocertes, a man of great munificence and of wonderful power (at the age of twenty-two he commanded an army in Syria), but he was very vain and pompous, and loved to display grandeur in his apparel. He is said to have been more like a theatrical player than a king, for he not only

affected a superfluity of ornament in wearing a double diadem, and a robe of purple, interwoven with gold, but he had shoes made of cloth of gold, with soles of fine purple, and he had engaged for his benefit artistes in the ornamentation of textiles, for we read he had a robe, that occupied a very long time in weaving, of the most sumptuous magnificence, both in colour and design. The figures of the world and all their heavenly bodies were to be represented upon it; so gorgeous was this robe that none of his successors would ever presume to wear it. Again, we read that when Alexander the Great, having made himself master of Susa, was searching in the king's palace, he found, amongst other riches, furniture of exquisite design, and of inexpressible value; there was purple of Hermione, worth five thousand talents, which, though it had been laid up a hundred and ninety years, still retained its first freshness and beauty. As we have to speak of this rich colour (purple) several times, it will be as well to give some idea of its value. The total worth of the purple just mentioned amounts to the immense sum of £968,750; a talent is worth in English money £193 15s. This purple of Hermione is not only very difficult to obtain, but very costly in its production. Pliny tells us that a pound of double dipped or twice dyed purple, in the time of Augustus, was sold for a hundred crowns. The reason that is assigned for this beautiful colour retaining its permanency, brilliancy, and lustre, is that the purple wool was combed with honey, and the white wool with white oil. This fosters the idea that the material was dyed in its raw state, or as we commonly term it, "wool dyed;" and we are assured that specimens of the same kind and age are still to be seen in all their freshness and lustre. Purple was with the Ancients, considered a colour of great dignity, and was, therefore, much prized by the Greeks and Romans; it was regarded by them as a prerogative of sovereign power. Plutarch says, Galba was the richest of private men, but of a very parsimonious character; his pride was not in dress and gorgeous costume, but in strict economy and temperance. Galba was requested by Titus Venius to put on the robe of dignity, and accept the imperial purple. The question may here be asked—What is this rich colour, and from what is it derived? This rich colour comes from the East, and especially from Phoenicia; it seems to have a great peculiarity, which does not appertain to colours of our day; instead of fading like most other bright colours, as reds, violets, and blues, it retains its colour as long as the material lasts.

(To be continued).

Production of Novelties.

That novelties and productions of merit will sell, even in these times of depression, there is proof enough afforded, and a special instance occurred recently in the application of Messrs. Norton, Brothers, and Company, Limited, manufacturers of fancy shawls and other articles of a superior description (that are well known in the better-class wholesale trades), who applied in the Chancery Division for the reduction of their capital. The directors proposed, not thinking it advisable to divide the accumulated fund as dividend, that after payment of the usual dividend, to take £22,510 out of the profits in reduction of the capital. By the 3rd Section of the Limited Liability Act it was provided that when a firm had accumulated a large fund of profits, it would be lawful, by special resolution of the company, to return to the shareholders a reduction of capital; but the nominal capital had to be increased by an amount similar to such reduction. Mr. Justice Kay, before whom the application was made, granted it, and we mention the circumstance to show that taste and skill will rise superior to the difficulties of even bad times. Messrs. Norton's principal branch used to be the shawl trade, which has now nearly died out; but they turned their attention to articles of a different description, and, amongst others, brought out the pretty imitation feather trimming, which has had a large sale. It got first into the hands of those engaged in the shawl and dress-goods trade, where it was not appropriate, Messrs. Norton's *clientele* lying in this direction rather than amongst trimming houses, and it was consequently not exhibited in stripes, but in the entire uncut width as the web was made, instead of being separated, the same as a trimming house would have dealt with the material, and boxed up after the approved fashion known to trimming buyers and sellers; the form in which it was produced was somewhat embarrassing to those who at first dealt with the article. Taste and skill, however, in the production of novelties will command success in the face of every difficulty, natural or artificial, and it is an agreeable task to chronicle such a circumstance in these times of unusual trade depression, the increase of capital, instead of its diminution, in consequence of reduced profits, being most commonly needed.

The Importance of Good Water for Manufacturing and Dyeing Purposes.

In our last issue an article was given on the importance of good water for manufacturing purposes. This has interested a large section of our readers, and has induced us to give them some extracts on this very important question, from "The Manual of Colours and Dye Wares," by Mr. J. W. Slater, a work which should be in the hands of all those interested in the textile trades. "Of all articles employed in dyeing and printing, water is the most important. If it be defective in quality or quantity, the utmost skill will be expended either in vain or at a disadvantage. To remedy bad water on 'paying' terms is a most difficult, often an altogether impracticable affair. Pure water consists merely of oxygen and hydrogen combined in the proportions of 8 lbs. of the former to 1 lb. of the latter. But such water, like a mathematical line, exists merely in hypothesis. The purest water in existence holds in solution the gases and vapours of the atmosphere with which it has come in contact, as well as minute traces dissolved from the vessels in which it has been preserved. Almost all natural waters existing in available quantity contain foreign matter sufficient to modify their chemical behaviour, and to produce results different from what would be obtained even with ordinary distilled water, which is conventionally styled 'pure.' The foreign matters present in water may be divided into two classes; substances held in suspension and such as are truly dissolved. The former are the less dangerous and the more easily removed. They consist of sand and clay, oxide of iron, sulphuret of iron and debris of animal and vegetable substances; also in streams passing through manufacturing districts, greasy matter, compounds which may be styled soaps of lime, iron, alumina, lead, tin, &c. Some of these matters, especially spent or half-spent dyewares, grease, and the soaps just mentioned, are capable of doing much mischief. They are, however, capable of being removed by filtration whenever there is room for filter-beds and lodges sufficient to contain a necessary supply. The dissolved impurities are more varied, more detrimental in their effects, and much more difficult to remove. They include gases held in solution, such as oxygen, hydrogen, nitrogen, carbonic acid, hydro-sulphuric acid, &c.; liquid acids, such as sulphuric, muriatic, nitric, oxalic, free or combined; the alkalies, soda, potash, ammonia; soluble salts of alumina, lime, magnesia, manganese, iron, copper, lead, tin, and arsenic; further extracts and solutions of dye-wares, the soluble portions of sewage, &c., &c. The effects of these impurities are of course highly varied, nor can any stream contain *all* these in a liquid form, as many of them, on meeting, mutually precipitate each other. The most formidable are salts of iron and copper, which sadden all the dye-woods, cochineal, &c., and render it impossible to dye light and bright shades; salts of lime and magnesia which prevent the water from bleeding the dye-wares, and precipitate a portion of the dissolved colours as lakes, &c.; alkalies, which precipitate or spoil acid mordants, render it impossible to purify safflower, give scarlets and oranges an unpleasant bluish cast, &c. Soluble sulphides or hydro-sulphates blacken all colours containing lead, injure those containing tin, and spoil royal blues. The mixture of organic matters, dye-wares, &c., soil all fabrics, and lessen the lustre of every colour even when they do not positively alter the shade. If it is intended to erect a new dye, print or colour works, or to bring a fresh supply of water to one already existing, the proposed source, stream, or spring, should be carefully examined. Note first the strata from which it is fed. The best waters are those which flow from clay-slate, granite, quartz-rock, trap-rocks, and mill-stone grit, or from beds of sand and gravel, also the surface-drainage of peat-moors. Those from dolomite, mountain limestone, chalk, &c., are inferior, being charged with lime and magnesia. In particular, the drainage from alum-shales, iron-shales, ochre-beds, and coal-deposits, which always contain iron-pyrites, should be avoided. To this end observe whether any of the feeders of the proposed stream deposit a yellowish-brown sediment (iron-mud) in their course; whether the stones lying in and near the water have yellow or brown discolourations, and whether there is an iridescent scum where the water is still. In general, the water of rivers and lakes, if not artificially contaminated, will be better for tinctorial purposes than that of the springs by which they are fed, since certain salts, both of iron and lime, on prolonged exposure to the air, are rendered insoluble. The next point is to ascertain what manufacturing refuse, sewage, &c., if any, enters the stream. Particular attention must be paid to possible sources of colouring matters, iron, acids, soap-refuse, grease, soda, tar-refuse, &c. The next thing is to test the water. No one process is of course sufficient to detect all possible impurities. The water, if turbid, is cleared by settling and filtration if necessary, and the following special tests applied. To detect alkaline sulphides, add a few drops of a solution of the nitro-prusside of potassium, which will give a fine violet tinge if this impurity be present. For salts of iron concentrate the water by evaporation in a white porcelain dish, noting if any ochreous matter is deposited. To the concentrated liquid add a solution of galls, and observe if any browning or blackening appear. To another portion a mixture of the red and yellow prussiates is added. A blue colouration or precipitate shows the presence of iron. Sulphuric acid is detected by adding first a few drops of pure muriatic acid, and then solution of chloride of barium. A white precipitate shows the presence of sulphuric acid, or soluble sulphates. If the water is in like

manner acidulated with pure nitric acid, and a little of a solution of nitrate of silver added, a white curdy precipitate falls if muriatic acid or soluble chlorides are present. To detect lime, add to the concentrated water some oxalate of ammonia. If a white precipitate falls after standing a few minutes, lime is present. If alum or sulphate of alumina is present, sulphuric acid will be detected. Again, concentrate the water as far as practicable, add pure caustic soda in excess, and to the clear liquid decanted off from any precipitate add solution of sal-ammoniac. If this produces a gelatinous precipitate, alumina in a soluble state is present. To detect magnesia, a more complicated process is needed if alumina—as is possible—be also present: Evaporate to dryness, redissolve in pure nitric acid, and heat upon the sand-bath to 480° Fahr., keeping up the heat till a glass rod dipped in ammonia, and held over the vessel, no longer shows the presence of acid fumes. This operation is best performed in a platinum capsule. The residue is moistened with a strong solution of nitrate of ammonia, and heated afresh till no more ammoniacal fumes are given off. The mass is treated with water, and digested at a gentle heat. A drop of weak liquid ammonia is added, which will occasion no turpidity if the heating has been rightly managed. The clear is now decanted off, rendered slightly alkaline with ammonia, and mixed with oxalate of ammonia, allowed to stand several hours, and filtered. This operation removes lime. Evaporate the clear filtrate to dryness with an excess of nitric acid to destroy ammoniacal salts; dissolve in pure water and add phosphate of soda and a little ammonia. If a precipitate is formed, magnesia was present in the water. Magnesia, if present as bicarbonate, is a very formidable impurity, being particularly unfavourable to madder-dyeing; if in the state of chloride or sulphate, it has very little detrimental influence. To ascertain this point, after having found that magnesia is present by the above process, take a fresh portion of the water and keep it at a boil for about an hour. Then allow it to cool, and filter it carefully. Then re-examine this clear liquid. If magnesia is not found in this boiled and filtered water, or is found in smaller quantity than in the unboiled water, it exists, in part at least, as carbonate, which is held in solution by free carbonic acid. By boiling, the free carbonic acid is expelled, and the magnesia precipitated. Waters containing magnesia in this state may be corrected by the addition of a trace of oxalic acid. Soluble organic matter is detected by adding a few drops of a solution of permanganate of potash. If organic matter is present this will soon be reduced, forming a brown precipitate of the hydrated peroxide of manganese.

(To be continued.)

New Patterns in Cloths for Spring and Summer, 1886.

In the ideas for worsted, woollen, and mixed cloths for gentlemen's wear for Spring and Summer, 1886, there are some new and original effects in texture, design, and colourings, in a variety of specially prepared patterns which are now before us. In worsted coatings, especially in all black, many samples are being woven in thinner materials than has been the case recently; this necessitates the use of finer warp and weft, and, of course, the fabrics are of a finer make. The finish given them adds greatly to their appearance; they show what rapid strides have been made in this department during recent years. In design, not much difference, on the whole, is perceptible in black cloths since last summer season, but in the fancy varieties, some entirely new effects are being produced. In patterns for the home trade, the run is still mostly on small checks, stripes, &c., and, in a few cases, in rather more subdued colours than during last season, but for export, brighter hues prevail. Silk does not show so prominently in the patterns, except in the dotted or running effects, although it will still be used to a moderate extent. In the mixed worsted and woollen fabrics, many samples are exceedingly effective, especially those for foreign trades, and as a rule the patterns are being produced in rather larger checks and broader stripes, &c., in fact both design and colouring are in a bolder style. Coarser warp and weft are also being used, and, in consequence, the cloths have not the fine finished appearance perceptible recently. In the lower make of cloths there is not much difference in texture, design or finish, although some brighter colouring will be used. The business done in this class, during the past two or three years, has been so indifferent, that there has been no inducement to make new departures in this branch of the trade. In Scotch Cheviots, some rather novel effects have been produced, which, if carried out properly by manufacturers of this class of cloths, should improve the trade. In tweeds, some moderately good fabrics, both in colouring and design, are introduced. The samples we have on hand are from the best French, English and German sources, and they can be had from our office, at £2 per 100 samples, on a remittance being sent with order.



A Free Trade Customs Union.

A Paris correspondent says—M. de Molinari, the eminent economist, favours me with the following suggestive communication:—"The 1841-1862 period, during which Free Trade made its greatest advances in England and on the Continent, has been succeeded by a period of reaction, which continues, and even threatens to become worse. The Commercial Treaties of 1860-61 have been only partially renewed, and with increased restrictions. The United States after the war of secession entered on the prohibitory system. Russia has gone still further in the same direction, by substituting specie for paper money in the payment of Customs duties. In Germany Prince Bismarck has carried protection; and France, in all probability, after increasing the sugar duties, is about to raise the duty on corn, and perhaps also that on cattle. Russia is inclined to increase the duties on tea, herrings, vegetable oils, silk, &c. This protectionist reaction, seconded by bloated expenditure, especially on armaments, has certainly not uttered its last word. Free Traders are everywhere on the defensive, painfully struggling to hold their ground, but without success. The only countries wherein they have maintained their advantages, and are not seriously imperilled, are England, Belgium, and Holland. England is their stronghold; Belgium and Holland are their outworks. Such being the case, would it not be well to link together these Free Trade countries by a Customs Union like the German Zollverein? At the first blush, such a union between countries separated by the sea, and whose fiscal systems differ in many respects, seems to offer insurmountable obstacles; but the example of the Zollverein teaches us that fiscal obstacles may be smoothed over for the sake of a paramount interest. The difficulties arising from geographical situation are more apparent than real. Ireland, since the beginning of the century, has been included in the English Customs system, notwithstanding St. George's Channel. Now, the North Sea and the Straits of Dover are as quickly crossed from Dover to Ostend as St. George's Channel is from Holyhead to Dublin. If the two islands can be fiscally united, why not the two islands with a portion of the Continent? The only real difficulty is the unification of the Customs duties. It is clear that Belgium and Holland ought to accept the English tariff. The Dutch tariff is already very much like it, and is the most liberal on the Continent. The Belgian is somewhat higher, and more complicated. Certain manufactured goods, such as textiles, are still somewhat heavily protected in Belgium; but this is at least in part contrary to the wishes of the manufacturers themselves. The Chamber of Commerce at Verviers, the chief woollen centre, has for more than 20 years been advocating in its report the abolition of Customs duties. It is true, the Ghent cotton industry has remained protectionist; but it would not be difficult to show the people of Ghent that if a Customs Union with England might diminish the importance of their spinning mills, it could not fail to stimulate their weaving in a greater degree. How advantageous, too, to all branches of production in that industrious land would be a close union with a country which is the great centre of the world's capital and commerce! A recent conversation with one of the most influential Belgian politicians has convinced me moreover that the idea would meet with warm sympathy in official circles. No doubt, such a union would be less agreeable to politicians in Germany and France; but it would certainly be well received by the manufacturers and merchants of those two great countries, who could then freely send their products to Belgium and Holland, as they already do to England, free of duty. An Anglo-Dutch-Belgian Customs Union would comprise three countries whose foreign trade amounts to about £1,000,000,000, and forms nearly two-fifths of the foreign trade of Continental and insular Europe. United, these three Free Trade countries would have great power of expansion, and be capable of confronting Protectionist nations. After being too long on the defensive, would not Free Trade in these three united countries be a wedge driven into the wormeaten trunk of Continental Protection?"

State of Trade in France.

The summary return of imports and exports of France for the past year, as compared with that of 1883, is as follows:—

		IMPORTS.	
		1884.	1883.
		Francs.	Francs.
Food ... ..	...	1,499,507,000	1,617,167,000
Raw materials ...	...	2,194,255,000	2,278,627,000
Manufactures ...	...	643,775,000	704,450,000
Miscellaneous ...	...	188,430,000	207,105,000
Total ... ..	...	4,525,967,000	4,807,349,000
		EXPORTS.	
		1884.	1883.
		Francs.	Francs.
Food ... ..	...	799,209,000	828,358,000
Raw materials ...	...	679,145,000	655,993,000
Manufactures ...	...	1,722,311,000	1,813,776,000
Miscellaneous ...	...	149,435,000	153,745,000
Total ... ..	...	3,350,100,000	3,451,872,000

The above return quite bears out the complaints heard of the badness of trade. Both imports and exports show large diminutions as compared with those of 1883. Under imports the abatement is striking, amounting to no less than 281,000,000 francs. A part of this diminution, however, is due to the reduced requirements of foreign food products which are not necessarily connected with trade depression. But the imports, both of raw materials and of manufactures, have also largely fallen off, the latter by 60,700,000 francs, and this diminution and the considerable reduction in the demand for raw materials are decidedly signs of importance. In the return for 1883, though commercial depression had that year already set in, both these items showed an increase as compared with 1882, and the Protectionists then bewailed the increase in the imports of foreign manufactures and clamoured for more protection. They ought to rejoice now that this item shows a diminution, and, to be logical, they should deduce from it the conclusion that France has never been so prosperous as at the present moment, for it is long since the imports from abroad were so unpromising. As regards the falling off in the demand for raw materials, it marks a state of trade which must cause really patriotic French statesmen serious alarm. Under exports, the chief source of diminution is the item manufactures. The French exported during the past year 91,400,000f. less manufacture than in 1883. The difference as between 1884 and 1882 was 43,000,000f., so that the depression in this respect has more than doubled. I shall not endeavour to explain this general depression. Competent authorities have given in the *Times* full and detailed analyses of a state of depression which seems more or less universal, and if France seems to be suffering more than most other European countries, she has probably to thank those who have overburdened her finances with costly military expeditions, who have kept politics perpetually in a state of uncertainty, and who, in the interest of certain trades and manufactures, have deprived others of means of expansion, for there is scarcely a protected article of French trade which is not a raw material to some French industry. The Bill taxing foreign corn and cattle is to come on in the Chamber immediately after the Special Budget. Meanwhile, the National League against dear meat and bread is trying to rouse the towns to a sense of their interest.

Commercial Failures.

According to *Kemp's Mercantile Gazette*, the number of Failures in England and Wales gazetted during the five weeks ending Saturday, January 31st, was 362. The number in the corresponding five weeks of last year was 625, showing a decrease of 263. The number of Bills of Sale published in England and Wales for the five weeks ending Saturday, January 31st, was 1,147. The number in the corresponding five weeks of last year was 1,199, showing a decrease of 52. The number published in Ireland for the same five weeks was 57. The number in the corresponding five weeks of last year was 100, showing a decrease of 43.



ORIGINAL DESIGNS.

On our first plate we give a design for a Tapestry Table Cover in the Indian style of ornament. It may be produced in any of the colourings now so much in use for designs of this class. Mr. R. T. Lord, 28, Edmund Street, Bradford, is the designer of this pattern.

* * * *

On our second plate we give a simple but effective design for Cotton Damask; it will be found to be specially adapted for this class of fabrics.

* * * *

Mr. J. L. Horner, 26, Cannon Street, Manchester, has favoured us with a design of a sporting character; this will be found on our third plate. This is drawn for a Silk Handkerchief, and we have no doubt it will answer this purpose very well.

TO MANUFACTURERS AND DESIGNERS OF CLOTH.

The latest patterns of French and English Coatings, Vestings, Suitings, Fancy Cloths, Cassimeres, Tweeds, Mantle Cloths, &c. These Patterns give the latest Designs and Colourings for Cloths for the Spring and Summer Seasons in 1886.

100 SAMPLES FOR £2. CARRIAGE PAID.

A remittance must accompany order, made payable to H. and R. T. Lord, the "Journal of Fabrics and Textile Industries." Office, 10, Ann Place, Bradford, England.

The Awards in the Prize Competition.

In a recent number of our Journal, we announced our prize competition for designs for various classes of fabrics suitable for ladies' or gentlemen's wear; not more than six designs to be sent in by any competitor. The opportunity thus afforded to designers of exhibiting their skill has been, to a great extent, taken advantage of; but, although the competitors have been numerous, the result, in some respects, has not been what we could have wished. In some cases, the designs have little to recommend them, being decidedly behind the times in point of style; whilst in others the designers had exhibited their abilities by the production of one or two good patterns; the remainder being the reverse of novelties. But still competitors have not been wanting whose selections have been good throughout, and amongst these the prize winners, of course, have been found. We may here mention that two designers sent in each twelve, instead of six, patterns, and these were, of course, disqualified. In one selection here alluded to, the patterns were of marked excellence, and would have stood a chance of success had the proper rule been observed. The awards have been made as follows:—First prize, silver medal, Mr. John Barrett, Thornfield Cottage, Saville Town, Dewsbury, for designs for worsted coatings, fancy suitings, &c. Second prize, bronze medal, William Kivlichan, Stow, Midlothian, for designs for fancy trouserings, cheviots, and ladies' costume cloths.

MONTHLY TRADE REPORTS.

Wool.—At the London sales, which commenced on the 19th of last month, prices ruled at the beginning $\frac{1}{4}$ d. per lb. below the closing rates of the November series for Australian and Cape wools, the decline being especially prominent for faulty descriptions; but towards the close of the month better prices were obtainable for the superior classes. In the Yorkshire districts, English wools have met with a dragging demand, at rather easier rates, but Botany and the better class of wools have been firm. There has been very little disposition shown to speculate. In Scotland, there seems to have been sympathy with Yorkshire, as trade has been of a sluggish character, with hardly any signs of improvement. The yarn trade has been rather quieter, and any orders that have been offered have been at lower prices, although spinners have shown no disposition to accept them. Hopes are entertained that there will shortly be an increased demand for export. The piece branch has been of an unsatisfactory character; there has been very little new business done, and what has passed has been at falling prices.

Cotton.—The raw material has only been sold to meet actual requirements, and, although a slight rise in prices for some sorts took place at the close of the month, it was insignificant in value. The yarn branch has been the most satisfactory part of the trade, and prices have not changed to any extent, still there is room for considerable improvement in this department. Manufacturers have only bought to meet actual requirements, and as there is a large number of looms idle in the cotton districts the purchases are below the average. Cloths of nearly every kind have met with a dull sale, and there seems to be no sign of an early amendment. Reports from abroad show that heavy stocks are held, and this fact makes manufacturers rather uneasy for the future. Prices have been rather irregular, the tendency being downward.

Woollen.—This branch has not shown as satisfactory results, on the whole, as during the past few months. A slight falling off in the demand for most classes of goods has been experienced in all the centres of the industry. Although full time amongst the manufacturers is the rule, still some are running their mills short time. The principal demand has been for the finer makes of worsteds, tweeds, diagonals and cheviots, the patterns being generally small, and the colourings bright. The demand for export has fallen off, especially for the United States, but still a fair trade is expected with countries abroad during the year. Prices, on the whole, keep firm.

Linen.—The linen trade has improved slightly, and manufacturers are rather more hopeful that better times are coming for them; more business has been done at firmer rates, and more looms are running than for some time past. The jute branch has shown no signs of improvement, but if anything trade has been of a more gloomy character, and prices in favour of buyers, and there seems no prospect, judging by appearances, of the department being in a more satisfactory state for some time to come. Stocks on hand are large, and short time is the rule.

Carpets.—This branch has been only quiet. The Brussels trade has been better off than the tapestry; but as plants in the latter were reduced during 1884 there will not, during the year, be as much danger of over-production as formerly. Rug manufacturers commenced the year quietly, and rug weavers are but partially employed. In the hand-made carpet trade of the better qualities more is doing, and some makers are busy. The royal Axminster trade, as a whole, is not so well engaged as it was a few months ago, but no doubt, the demand will improve with the early spring.

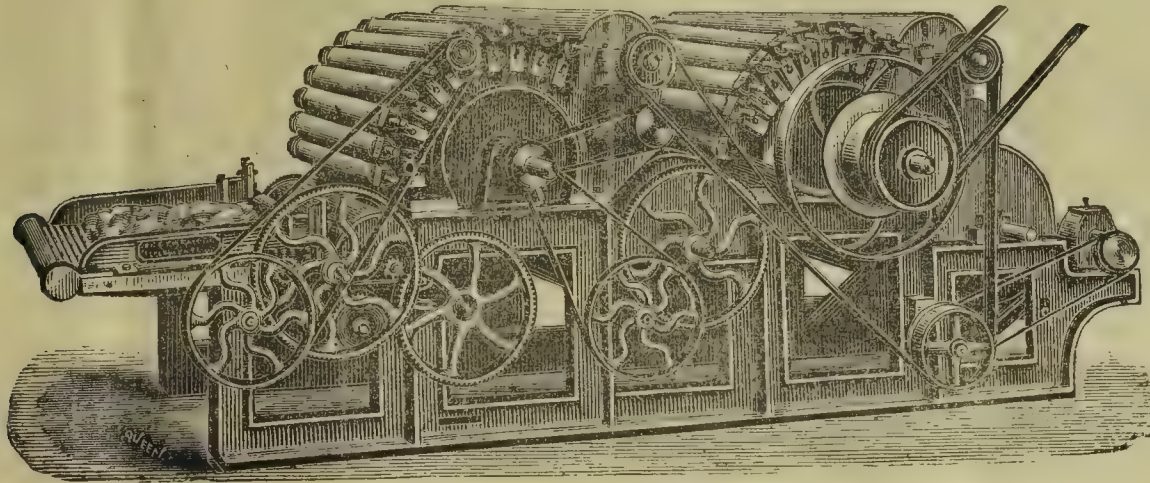
The prospectus is issued of a company formed for the purpose of encouraging the Indian carpet manufacture, although there is, it must be admitted, an avowed purpose of making a rare good profit into the bargain. An immediate start is purposed to be made, so as to let the company have opportunity to prepare a complete and representative display in the Indian Exhibition of 1886, and factories have already been arranged for.

MACHINE "GARNETT"

*For Opening Hard Twisted
Woollen and Worsted
Waste.*



*À ouvrir les laines fortement
frisees et les dechets
de laine.*



These Machines are guaranteed to be of the very best quality, both as regards material and workmanship, and possess many recent improvements.

We beg to announce that we have just obtained
ROYAL LETTERS PATENT

For improvements in these Machines, whereby we are now able to put 14, 16, and even 24 rows of teeth per inch on to the cylinders, whereas formerly we could not exceed 12 rows per inch.

Ces machines sont garanties de première qualité, sous le rapport du choix des matériaux et de la construction. Elles renferment plusieurs perfectionnements tout nouveaux.

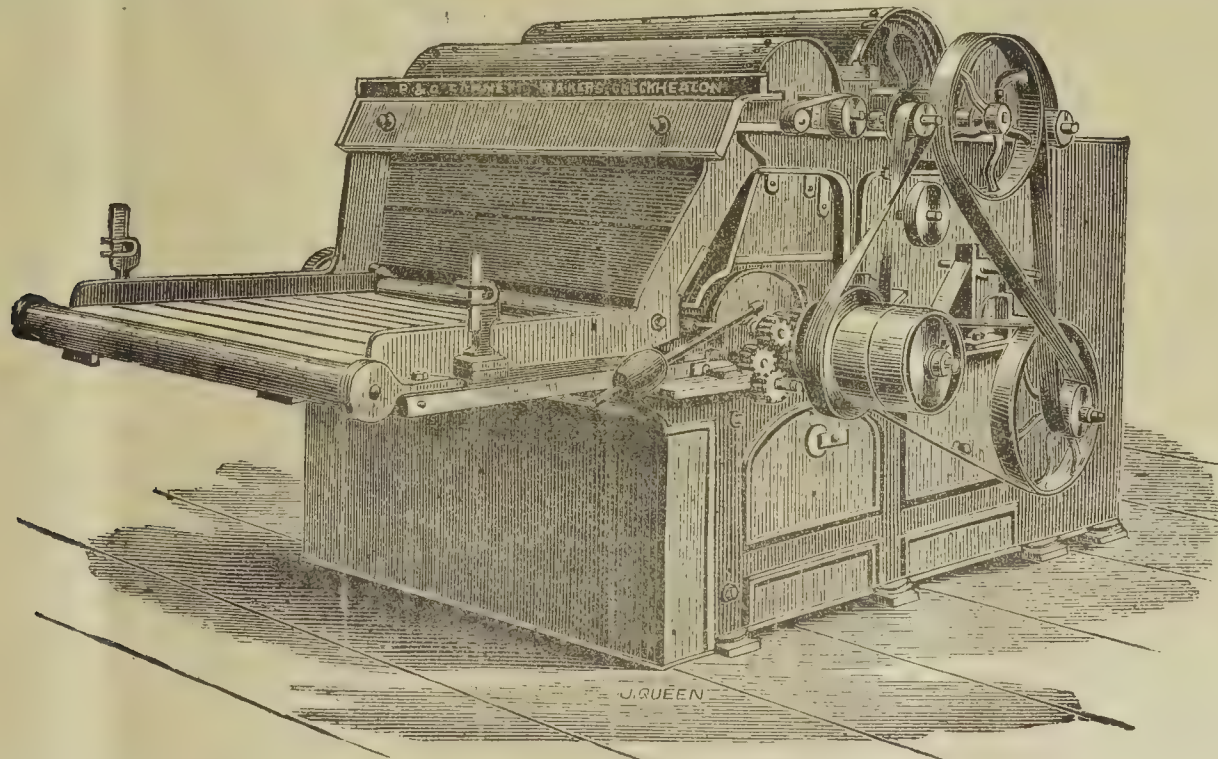
Nous venons d'obtenir
UN BREVET ANGLAIS

Pour un perfectionnement au moyen duquel nous pouvons placer 14, 16 et jusqu'à 24 rangs de dents au pouce sur les cylindres, tandis que jusqu'alors nous ne pouvions dépasser 12 rangs au pouce.

P. & C. GARNETT, SOLE PATENTEEES,
CLECKHEATON, YORKSHIRE.

WHO ARE ALSO MAKERS OF
GARNETT'S PATENT COTTON GIN,
Unequalled for fast Seed Cotton.

NOUS CONSTRUISONS AUSSI
L'EGRENOIR BREVETÉ DE GARNETT
Sans rival pour la préparation des cotons à graine dure.



**IMPROVED WOOL CLEANING AND BURRING
MACHINE,**

Capable of cleaning 1,500 lbs. to 1,600 lbs. of Wool per day. The very best and most economical machine for this purpose which has yet been introduced to the public. Also

GARNETT'S PATENT METALLIC CARD,

For covering burr rollers and breasts of carding engines for woollen and worsted, and
TAKERS-IN OF COTTON CARDING ENGINES.

From Mr. ROBERT PLATT.

Stalybridge, May 9th, 1877.

In answer to your inquiry of the 7th, I have had your patent Metallic Cord in use more than twenty years, and am very much pleased with the working of it. Its advantages are that it is much cleaner and less costly than leather or any other covering.

**LA MACHINE PERFECTIONNÉE À NETTOYER
ET ÉCHARDONNER LES LAINES,**

Pouvant nettoyer 1,500 à 1,600 livres de laine par jour. C'est la meilleure machine et la plus économique qui ait jamais été offerte pour cet emploi à l'industrie. Nous construisons aussi

**LES CARDES MÉTALLIQUES BREVETÉES
DE GARNETT,**

Pour garnir les alimenteurs, et poitrinières des cardes à laine et à laine peignée
LES BRISEURS DES CARDES À COTON.

Attestation de M. ROBERT PLATT.

Stalybridge, 9 Mai, 1877.

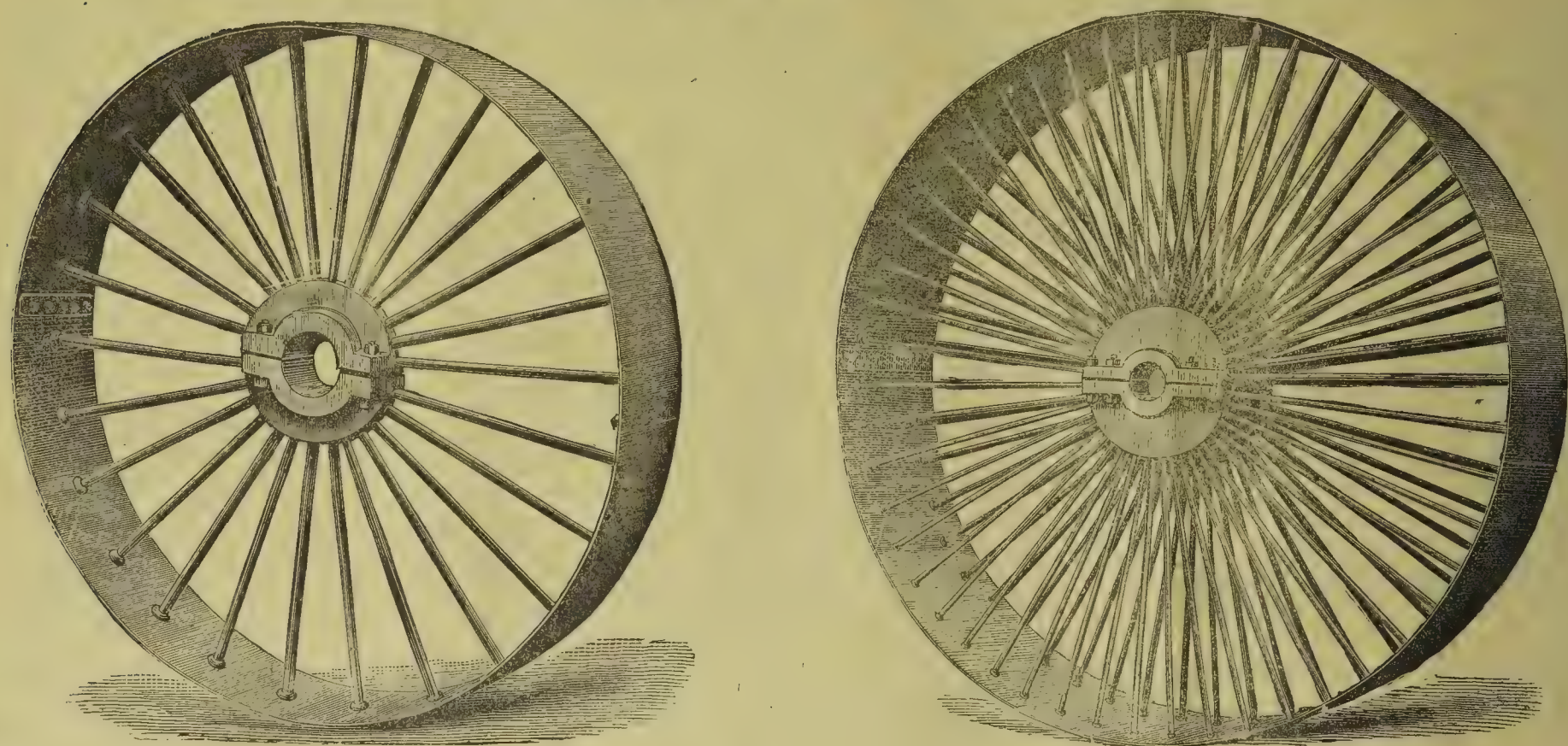
En réponse à votre lettre du 7^{ct}, j'emploie depuis plus de vingt ans votre système breveté de cardes métalliques et j'en suis très satisfait. Il possède l'avantage d'être beaucoup plus propre et moins cher que le cuir ou tout autre genre de garniture.

Agent—Mr. C. BORISSOW, Rue a Fiens, 3 ter. Lille, FRANCE.

RODGERS' PATENT WROUGHT IRON PULLEYS, SPLIT OR SOLID.

ALL SIZES FROM 6 INCHES UP TO 24 FEET DIAMETER.

Over 45,000 in use.



THE BEST PULLEY IN THE WORLD.

Wrought Iron THROUGHOUT, RIM, ARMS and BOSS.

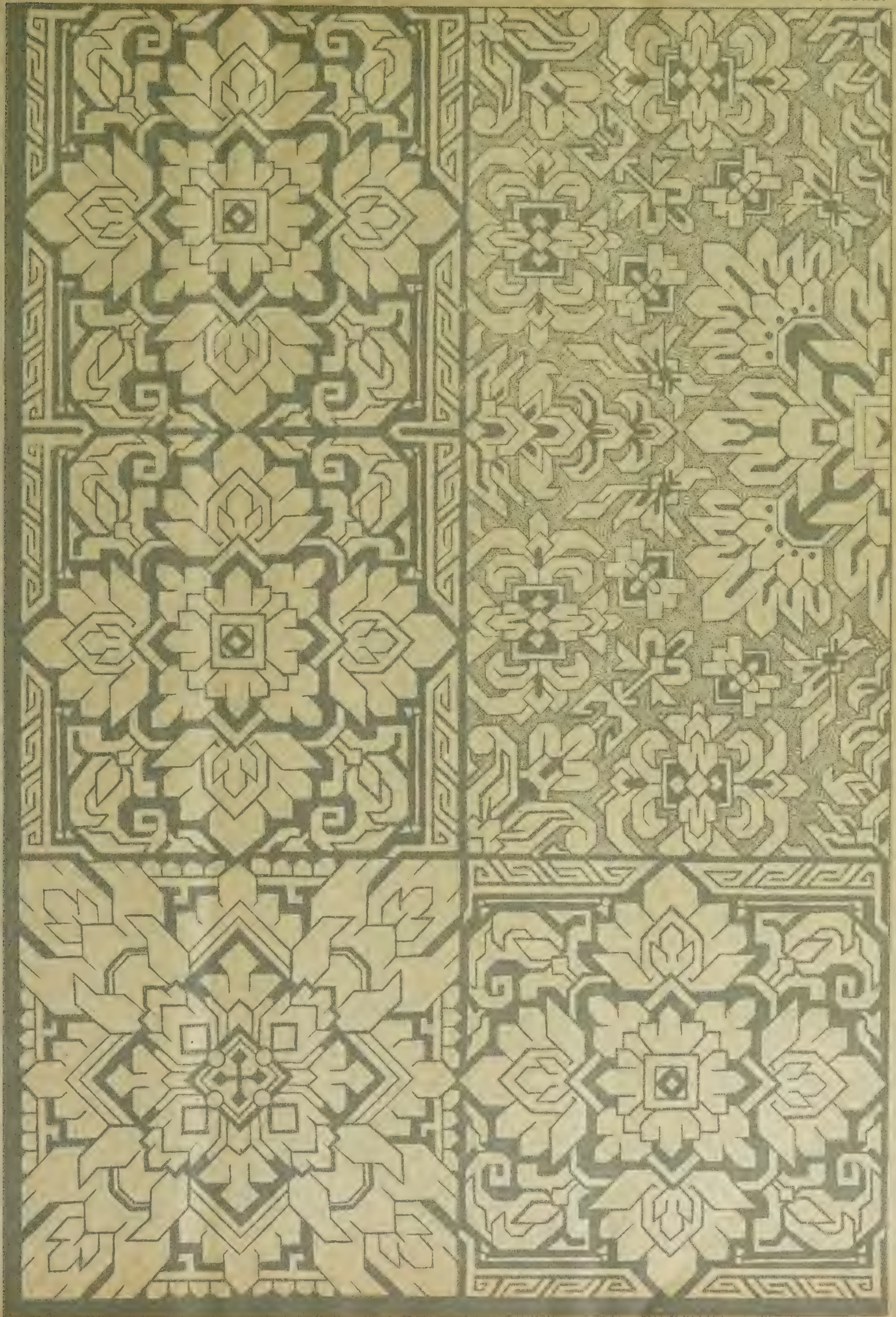
THE ONLY WROUGHT IRON PULLEY MADE.

SOLE MAKERS—

HUDSWELL, CLARKE & Co.

RAILWAY FOUNDRY,

LEEDS, ENGLAND.



TAPESTRY TABLE COVER.

12TH FEBRUARY, 1885.



COTTON DAMASK.

THE JOURNAL OF FABRICS AND TEXTILE INDUSTRIES.

12TH FEBRUARY, 1885.

DESIGNED BY J. L. HORNER.

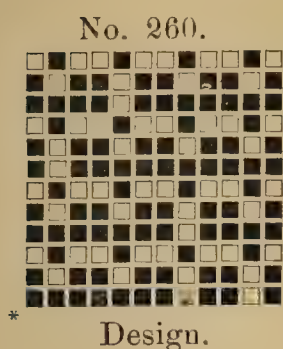


SILK HANDKERCHIEF.



Ottoman Mantle Cloth for Spring Season, 1886.

Woven samples of this pattern may be had on application.



Design.

No. 260. 1 pick 8 skeins wool.

1 „ 12 „ „

1 „ 2/4 cotton.

99 ends per inch.

66 Botany worsted, 2/52.

33 Black cotton 2/40.

60 picks per inch.

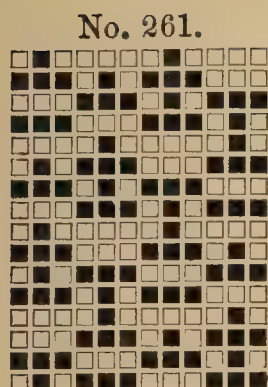
3 ends in a split.

33's reed.

60 inches wide in the loom.

56 inches when finished.

Worsted Coatings.



Design.

No. 261.

Warp, 2/54 twisted worsted.

Weft, 1/36 worsted.

78 ends per inch.

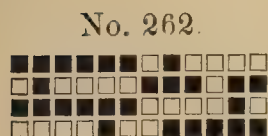
145 to 150 picks per inch.

6 ends in a split.

13's reed.

66 inches wide in loom.

56 inches wide when finished.



Design.

No. 262.

144 ends per inch.

130 picks per inch.

6 ends in a split.

24's reed.

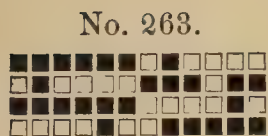
66 inches wide in loom.

56 inches wide when finished.

Warp, all 2/70 worsted.

2 picks of single worsted 70's in one shed.

1 pick of mohair 18's.



Design.

No. 263.

138 ends per inch.

88 picks per inch.

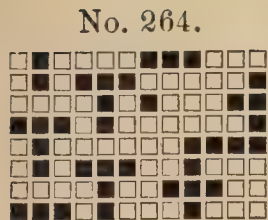
6 ends in a split.

23's reed.

66 inches wide in loom.

56 inches wide when finished.

Worsted Trousering.



Design.

No. 264.

Warp: 3 Lavender.

Weft: 1 Lavender.

3 White.

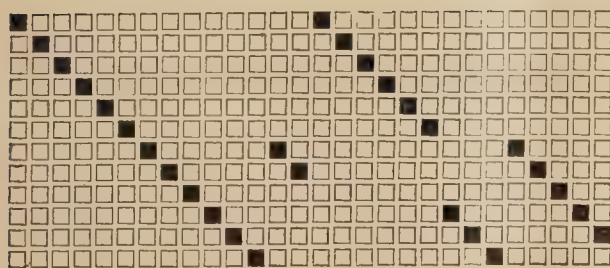
1 Black.

8 Black.

1 White.

1 Black.

All 2/50 worsted.



Draft.

100's reed—2 with 3,
and 2 with 4 ends
in a split.

12 shafts drafted.

62 inches wide in the
loom.

56 inches wide when
finished.

Fancy Suitings.

No. 265.

Warp:

Weft:



Design.

4 Black twist.

3 Black twist.

1 Fawn twist.

1 Fawn twist.

1 Light Sky Blue.

1 Bright Blue twist.

1 Crimson, Orange and Green twist.

36 ends per inch.

36 picks per inch.

4 ends in a split.

9's reed.

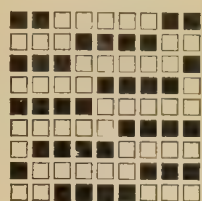
63 inches wide in loom.

54 inches wide when finished.

No. 266.

Warp:

Weft:



Design.

1 Blue.

1 Black.

1 Light Brown.

6 Black.

1 Crimson.

1 Black.

1 Light Blue.

6 Black.

Repeat.
Repeat.

7 Black worsted.

1 Bright Blue.

1 Brown.

7 Black worsted.

1 Crimson.

1 Light Brown.

7 Black.

1 Crimson.

1 Light Blue.

81 ends per inch.

90 picks per inch.

18's reed, 4's and 5's.

64 inches wide in loom.

56 inches wide when finished.

Running Looms by Compressed Air.

It is announced in a French paper that the city of Lyons has granted a subsidy from the municipal treasury for the support of a weaving school recently started there. The machinery, looms, &c., of the school are set in motion by compressed air, which is produced by a mill in the Rhone. The transport of power is effected by three motors, one of which, the smallest, is remarkable on account of its simplicity and cheapness, costing at most from 50 to 80 francs, or about \$16. It can be located at the foot of any loom, so that the compressed air, issuing from the generator, can directly set the shaft in motion. Belts are dispensed with by this system, its continuance of motion is simplified, and accidents are prevented. In this manner, an ordinary hand loom is in a simple manner transformed into a sort of power loom, and the most advantageous feature is that each loom can separately be set in motion by connecting small pieces of pipes located on the floor. In consequence of this successful adaptation of an old idea, it is intended to start a company in Lyons, for the purpose of supplying small quantities of motive power to the hand looms at the low price of 5 francs, or about \$1 per month, per loom.

The Indian and Colonial Exhibition.

The negotiations with the Indian Government respecting the extent and character of its co-operation towards the Indian and Colonial Exhibition of next year have been concluded. The Government of India will guarantee the sum of £20,000 to the Royal Commissioners to assist them in organising an Exhibition at South Kensington of the arts and manufactures of India, and towards the general administration of the Indian Section, for which Her Majesty's Commissioners will be responsible, whatever it may cost. Further, the Indian Government will contribute a collection of the raw products and specimens of local industries, and will arrange with the Bombay Government to lend the collections now being formed for the Bombay Exhibition of 1887, provided that the extra cost of the special collection sent by the Indian Government and of transmitting the loans of the Bombay Government shall not exceed £10,000. Taking into account the collections and the guarantee, the total contributions of the Indian Governments will amount in value to about £90,000.

The Hosiery Industry in Leicester.



CORRESPONDENT, writing to the "Textile Record" of the United States on the hosiery industry of England, says:—I should like to tell you of the movement for the improvement of the industry that has been set on foot in Leicester, and which it would be well if American knit-goods manufacturers directed their attention to. The necessity for the technical education of the knit-goods operatives and employers has forced itself upon the notice of the men of Leicester. Recently it was proposed to erect in Leicester some memorial of the late Mr. Ellis, who for many years was connected with the town, and was chairman of the Midland Railway Company. It was suggested that a technical school would best perpetuate his memory. The suggestion met with popular favour, and the result has been an erection of a wing to the public school of Leicester, admirably adapted for the purpose. On the upper floor is a lofty room, 50 feet long, fitted with a chemical laboratory to accommodate 25 pupils at one time. Under the laboratory is a lecture room to seat 70 students, also a physical laboratory and drawing classroom. The ground floor is for practical instruction in hosiery and dyeing. The new institution was opened a few days ago by Sir Henry Roscoe, one of the Royal Commissioners on Technical Education, who, in the course of his address, made some valuable remarks upon the importance of technical education as a means for maintaining national manufacturing superiority. I cannot, in the short space allotted me, do more than briefly notice some of the salient points of the address. Sir Henry Roscoe pointed to the fact that England had relied to a very great extent on individuals for the promotion of education. In other words, he may be understood to mean that higher education has been the outcome of voluntary aid. On the Continent the great technical institutions which were doing such admirable work are State institutions. Now Englishmen are agreed that other aid than that employed heretofore is necessary, and are fully aroused to the importance of giving sound technical education to all engaged in the staple industries of the country. In the schools now being established it is not proposed to teach trades, "for," said Sir Henry Roscoe, "the very important question of economy of production could not then be considered." What can be taught in schools, and taught as was nowhere else possible, were the principles upon which the special industry depended; just as the surgeon could only operate after he had gone through a complete course of instruction in anatomy, but acquired dexterity and confidence by a long course of his profession, so the lace maker or the calico printer could only successfully follow the progress of his industry after he was thoroughly master of every scientific and artistic detail of his business. This foundation is best formed in a school where the subject was laid before a student in a systematic manner, and thus a knowledge gained of the principles upon which this manufacture was based. This was the course pursued on the Continent, and this plan, in the judgment of the Royal Commissioners on the Technical Instruction, ought to be more widely followed in this country. Respecting the necessity that existed for originality in English textile designs, he said, "that in order to raise the position of an industry which had been deficient, not in the trained skill of its operative weavers, but in originality and in the blending of beauty with utility, it was clear that primary attention must be given to the application of the principles of art. If new branches of the textile industries were to be founded in this country, if England was to take the lead in all classes of design and weaving, it must be by the application of art to weaving; if we were content to copy others, we must be satisfied to take a secondary place."

The Emperor of Brazil is his own factory inspector. We know something of his Majesty's intelligent curiosity over here, but he seems not to have so far Anglicised his institutions as to trust reports and officials rather than his own eyes. It is a favourite occupation with him to leave his equipage, and with only a couple of attendants, to walk sometimes the distance of a square or more to a factory or business establishment, and drop in for a look round. Whether Brazilians or foreigners makes no matter, all share alike his Majesty's attentions. "Of course," we are told, "he is given the liberty of the establishment, and he takes his time in examining the machinery and *modus operandi*. With a kind word of encouragement and commendation he goes away, perhaps to pay a similar visit to another house."

The Continental Cotton and Linen Trades during 1884.

Certain branches of Continental manufacture into which cotton enters upon a scale of relative importance have been much interested in the question of the temporary free admission of special counts of yarns for use in conjunction with silk. France and Italy have shown in a practical manner their readiness to facilitate industrial progress in this way, but Germany has evinced a preference for an opposite course. There are naturally conflicting interests at stake, and under these circumstances the final solution of the questions under discussion presents features of difficulty. The French cotton industry is mainly dependent upon domestic trade for its prosperity, and has had a fairly satisfactory year. Commerce with Africa has suffered from various causes, and has not been as successful as those engaged in it could have desired. By far the most important event of the year in the Continental linen trade has been the deficiency in the Russian flax crop. Although the causes of this short supply were to some extent recognised at an early period, it was not till about October that the matter assumed serious proportions which led to a more or less important advance being established upon the various European markets. This arose to some extent from the unfavourable movement of the Russian Exchange. That the calculations made were not unfounded is proved by the fact that the quantity of flax brought into the Russian markets during the latter part of 1884 would seem to have been 35 per cent. less than during the corresponding period of 1883. The advance established towards the close of October in the French and Belgium markets for yarns has not only been fully maintained, but has been succeeded by other advances, and the year closed firm with an upward tendency of prices. For some time past the German and Austrian yarn markets had been in a relatively steady position and values had increased, so that the movement which has now affected the other principal Continental markets has not been unlooked for, even apart from the causes which finally brought it more immediately about. The imposition of protective duties in Germany has tended during the last few years to bring about an increase of domestic production in various branches where importations had previously limited the extent of trade. Improvements in the treatment of home-grown flax have been occupying the attention of German producers. A consignment of flax (grown and treated in the Belgian manner) recently left Chemnitz for Belfast. This fact is alluded to by various Continental journals as tending to illustrate the progress made by Germany in the particular branch of industry referred to. In connection with the jute industry, Roumania has adopted a wise policy in enacting the free admission of jute as well as of the machinery, &c., for treating it. This measure is intended to render this important grain-producing country independent of Austria for sacks, the supplies of which have hitherto been obtained there. It is estimated that the annual value of importations is £800,000. Germany has now 50,000 spindles and 2,400 looms engaged in the manufacture of jute articles, and steps are being taken to increase the means of production. Business has been fairly good during 1884, but doubts are expressed in well-informed quarters whether the outlets for the manufactured goods are sufficiently important to warrant an augmented production.

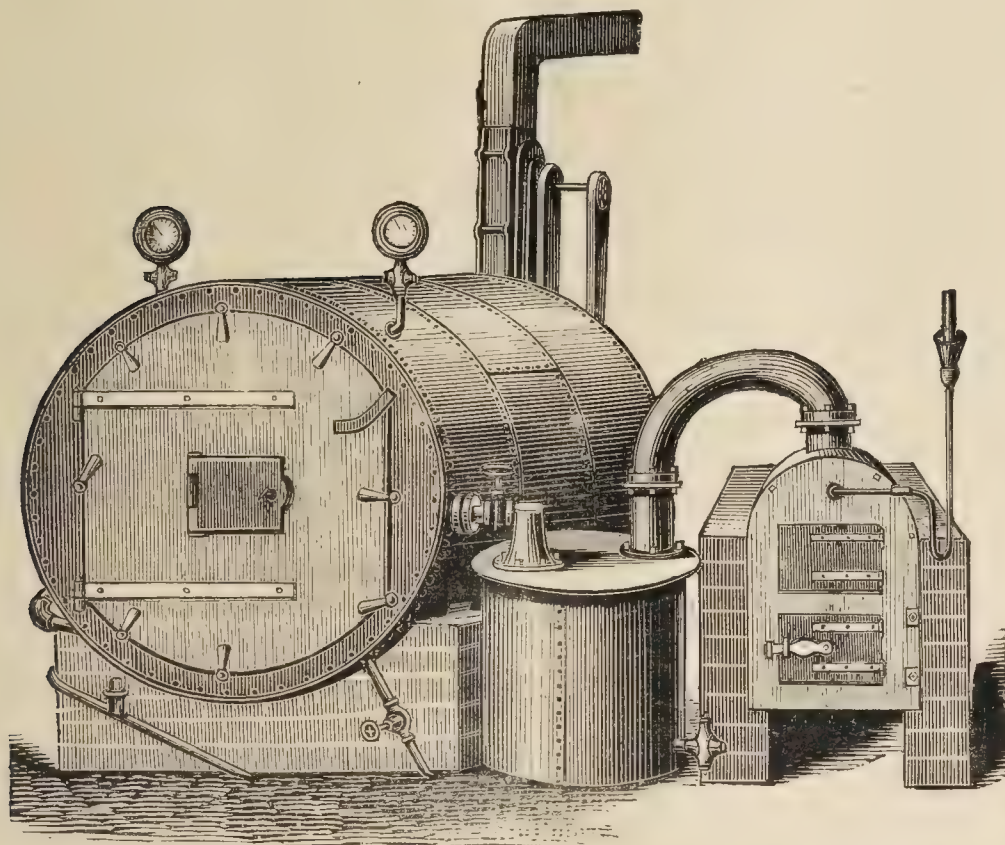
The Russian Customs Tariff.

The following modifications in the Russian Customs tariff were officially announced at St. Petersburg on February 2nd. The duty on salt herrings, dried cod, and other dried fish is raised by 7 copecks gold, and on tea of all kinds imported across the European frontier by 400 copecks per pound. The duty on wine in casks is raised by 95 copecks. On dressed silk, spun silk, reeled silk, yarn, sewing thread, and yarn made of floss silk, with or without admixture of wool or flax, the duty is increased by 800 copecks if not dyed, and by 1,600 copecks for dyed and printed descriptions. On olive oil and all vegetable oils the tariff is raised by 20 copecks gold per pood, and on sparkling wines in bottles by 15 copecks per bottle. Currants are admitted free of duty. The above modifications are now in force.

MACHINERY, TOOLS, &c.

Illingworth's Patent Carbonising Machine.

Numerous processes for the destruction of various kinds of vegetable matter when mixed with wool, worsted, and woollen, have been brought, during recent years, before the notice of those textile manufacturers whose object it has been to get rid of burrs, seeds, and other objectionable vegetable matter often found in wools; and also to destroy cotton, jute, &c., which have been contained in rags and piece goods. Various means for this purpose have been adopted, especially by manufacturers of mungoes and shoddies, but, as a rule, these have, for many reasons well known, been generally unsatisfactory. Some of the processes have a highly deleterious effect on the health of the workmen engaged upon them, and, in a less degree, on the residents in the neighbourhood of the place where the business is carried on. The object of inventors of machines for the carbonising of vegetable matter, as applied to textiles, has been to effectually do the work required, and at the same time to reduce the nuisance arising from the process to a minimum. Mr. J. Illingworth, of Ridings Mill, Whitelee, Batley, recently invented a carboniser which answers these requirements admirably. In the construction of the carboniser a steam shell is fitted with a solid end and front, which contains a door made to fit air-tight. Inside this shell is a perforated cage, revolved by suitable gearing. A small engine is used for working the machine, together with an air-pump and exhaust fan. The material to be treated is placed in the revolving cage, and the machine is closed air-tight; the air-pump is set in motion, and by this means a vacuum is formed of, say, 15 lbs.,

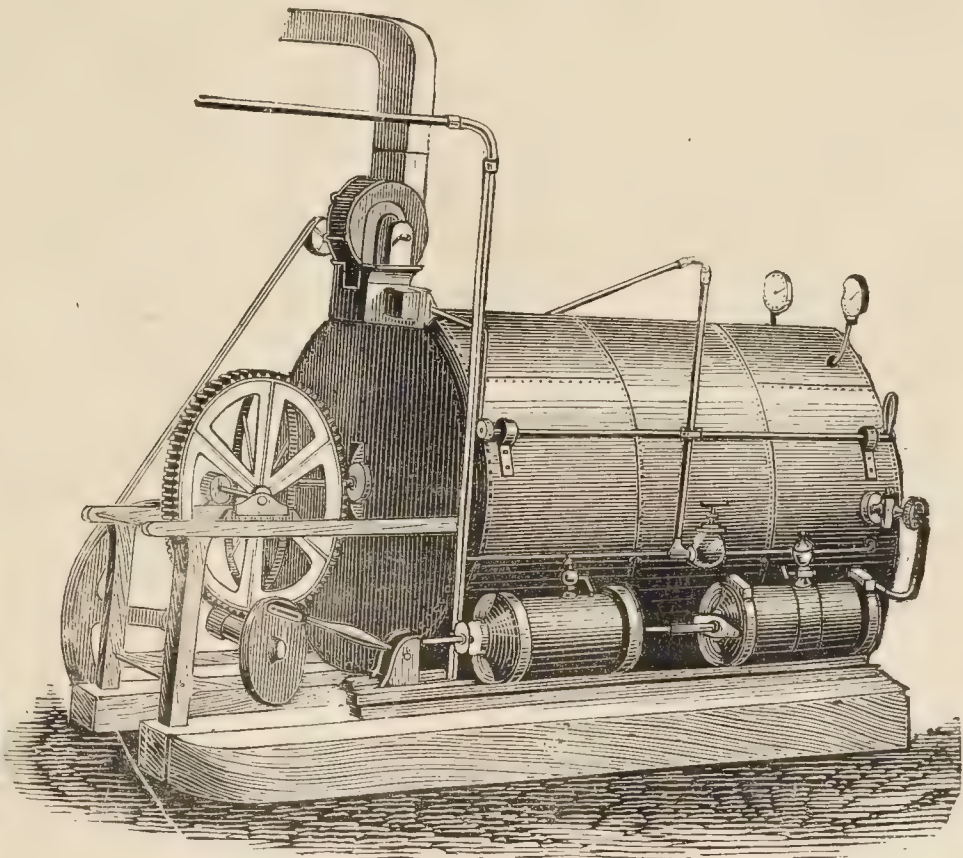


ILLINGWORTH'S PATENT CARBONISING MACHINE.

and all the air and moisture in the material are withdrawn, and the fibre is opened and prepared for receiving any gas or vapour that may enter. After the vacuum is formed, the valve is closed and the cage set in motion slowly, then a valve is opened to admit the gas which has been previously prepared. The vegetable matter readily absorbs the gas, after being specially prepared by the action of the air-pump, and thus it is easily destroyed. After the requisite time has elapsed for the destruction of the vegetable, the machine is opened and the speed of the engine is increased; this has a tendency to agitate the material in the cage; at the same time a strong current of air is passed through by means of the fan; this has the effect of removing much of the vegetable matter from the fibre, and any acid is practically carried off in the shape of fine dust. Mr. J. Illingworth claims the following advantages for his machine:—Firstly, being surrounded by a steam shell, it prevents the iron being destroyed by the gas, as it will not condense on plates heated by steam, but it is repelled or forced back upon the material. Secondly, there is no drying needed before placing in this machine, as is required in all others. The rags or wool can be placed in the machine just as they come, the air-pump doing all that is necessary in the way of preparing for the gas. By means of the exhaust fan the surplus gas is removed, and the place is cleared by a current of cold air in a few minutes, and so made fit for any one to enter to clear it out and refill. A full-sized machine will hold 5 cwt. of rags, and the process can be done in two hours, including filling, drying, and emptying, ready for another charge. Four charges (that is, one ton of rags,) can be done in a day of twelve hours, allowing time for meals; and this without variation of time, and at a cost of 15s. per ton, including both material and wages.

The Spanish Tariff.

The journal *El Imparcia* states that the proposals which the Government will submit to the Spanish Cortes as the basis of the negotiations for the conclusion of an Anglo-Spanish commercial treaty are as follow:—Spain to grant the most-favoured-nation treatment to England, provided the latter admits under the 1s. per gallon duty Spanish wines of 30deg. alcoholic strength; Spain also undertakes to reduce the duties on certain woollen goods and reform the classification of its Customs tariff if the English Government will admit wines of 32deg. alcoholic strength under the 1s. per gallon duty; these further arrangements only to take the shape of a definitive treaty if England agree to admit Spanish wines between 32deg. and 38deg., at a duty of 1s. 6d. per gallon. Otherwise the arrangements to expire at the same time as the other existing treaties of commerce between Spain and foreign States. It is also officially announced that the declaration recently signed at Madrid in reference to the commercial *modus vivendi* between Great Britain and Spain will follow the same course as that described by the Protocol of December 1st, 1883—that is to say, that a bill will shortly be presented to the Spanish Cortes authorising the placing of British commerce on the footing of the most-favoured-nation as soon as the British Parliament shall have authorised the raising of the lower half of the alcoholic scale by 4deg. Should this bill pass the Cortes the matter will be brought before Parliament in the financial statement of the Chancellor of the Exchequer.



Free Trade Policy.

The President of the Manchester Chamber of Commerce, speaking at the annual meeting of members, said that trade was no doubt in an unsatisfactory condition. Complaints regarding it were general, but he could not see that there were grounds for such serious forebodings as were indulged in by some people. The papers lately had been full of complaints from protectionist countries. In Russia there was a decline of 20 per cent. in the consumption of manufactures. In the United States the industrial depression was most intense. Wages had been reduced 25 or 30 per cent., and it was said that there were 350,000 hands out of employment in the States. The consumption of cotton was reported to have fallen off 10 per cent. during the year, and out of 100,000 hands usually employed in the cotton trade 20,000 were out of work. France, Germany, and Spain also complained of over-production. It would therefore appear that there was less cause for despondency on our part, if we compared our position with that of protectionist countries, notwithstanding the longer hours of labour that were worked there.

Oberdoing Jute Industry in Germany.

In 1879 a duty of six to twelve marks the cwt. was imposed in Germany on jute manufactures, as to quality, and as the consumption at home increased very much during ensuing years, dividends of 20 to 25 per cent. became the order of the day, especially among older establishments. A national industry was thus created, but the profits made causing a rush to go into this particular textile branch, the expansion in this direction has become so excessive now that a serious reaction threatens it. There are at present in Germany no fewer than twenty-three jute spinneries in operation, with 51,126 spindles, and there are besides 2,340 looms. Aside therefrom there are a great many hand and mechanical looms working, outside of the above regular establishments, either domestic or foreign yarns. Some of the factories are being enlarged; hence, in this manner, in all the present year some 10,000 spindles and 600 looms are to be added to those enumerated above. The (about 61,000) spindles then at work will be capable of turning out 52,200 tons of fabrics, while home consumption is not expected to exceed 38,500 tons, hence about 13,700 tons will have to be exported. Here begins the difficulty, for Scotch and Indian competition is such and at such low rates abroad that it will not be an easy matter for German jute goods to struggle with them to advantage. In spite of this there is a project afoot to erect a new factory at Itzehoe with 2,772 spindles and 180 looms, at an outlay of capital of 1,300,000 marks. The working capital is to be 350,000 marks; 1,000,000 marks shares are to be issued, and 650,000 marks 6 per cent. bonds.

Registration of Trade Marks in Germany.

The following letter has appeared in the *Times*: Sir,—In 1875 you permitted me to call attention in the *Times* to the new trade mark law, which then first came into operation in the German Empire, and in April, 1876, I was enabled to report to you how many British firms had availed themselves of it. No copy of the *Times* of that year being accessible to me here, I cannot vouch for the exact number, but I believe it amounted to nearly four hundred. Now, this year, the ten years' lawful protection of the trade marks then registered expires, and the applications for renewal have to be made. Perhaps it may be needful to remind British and Scotch manufacturers and traders of the expiration of the protection granted them, and in doing so I would beg to inform them that no translation from others but sworn interpreters to the Leipsic Court is accepted by it as valid. Those firms, therefore, that employ agents in other German towns should instruct them to send only the original documents required, as by permitting or ordering them to accompany the originals by a translation the parties incur double expense, first for the translation, and then for the examination of it by a sworn interpreter to the Leipsic Court. It may also be as well to state that the latter should not be addressed by the designation of "Commercial Court," none such existing any longer since the introduction of the new system of judicature. The address should be "To the Royal Amtsgericht, Leipsic," this including the Court or department for the registration of trading firms and trade marks, both for natives and foreigners. —I am, sir, yours most respectfully, Dr. DAVID ASHER, Sworn Interpreter and Translator to the Leipsic Royal Courts (both Amts and Laud Gericht). Leipsic, January 21.

A Chance for Inventors.

The State of Yucatan, Mexico, has offered a prize of 20,000 dols. to the inventor of a machine which shall successfully extract the fibre from henquin, under the following conditions:—It must be automatic, and not require skilled and experienced workmen to manage it; it must be entirely free from danger to the operators; it must require less motive force than the machine now in use with relation to its producing power; it must increase the production or extraction of the fibre within a given time, diminishing its loss, compared with the various machines in use. The reward is to remain open for three years, and is without prejudice to the right of proprietorship and of patent.

ODDS AND ENDS.

Ireland is still greatly superior to other countries in its capacity for manufacturing linen. Her spindles amount to 874,788, while those of France, which comes next to her in spinning power, number only 500,000. Austria and Hungary stand third, with 384,908 spindles; Germany is fourth, with 318,467; Belgium fifth, with 306,040; Scotland sixth, with 265,263; England and Wales seventh, with 190,808; and Russia eighth, with 160,000.

Much dissatisfaction is being expressed at Gaboon, West Africa, at the heavy duties levied on goods going into the settlement, and it is stated that unless some remission is made in a very short time the whole of the trading houses there will be forced to close. A differential tariff now exists in Gaboon, and English goods are charged 60 per cent. more than goods of French origin, but, notwithstanding this, it is stated that the French houses are suffering equally with the English houses.

If we are to believe Dr Jaeger, and wear only animal fibre as clothing, it is desirable to have as great a variety as possible of such fibres. We are interested to note that the down of hens, ducks and geese is being manufactured into cloth which is light, warm and waterproof, and can be dyed of any colour. If this new Lyons manufacture prove a success, it will not only add another and desirable textile to our stock, but utilise a great quantity of material which has hitherto been, not only useless, but, an incumbrance to be got rid of by all housekeepers and persons engaged in preparing fowls for market.

The British Chamber of Commerce in Paris has brought out a quarterly magazine entitled the "Anglo French Mercantile Review." It is devoted to information of interest to Englishmen engaged in trade with France. The number just issued contains, among other matter, papers on the Bank of France, the French law of patents for inventions as modified by the International Convention of 1883, the adoption of a decimal system of coinage in England, commercial failures in France, and the codification of English mercantile law. Messrs. Waterlow and Sons, Limited, are the publishers of this new publication.

English merchants and manufacturers should not lose sight of the fact that Java and Madeira have a population of more than 20,000,000, and deserve the attention of those persons who are looking for a fresh market for their goods. Commerce is free. Each country may compete to the best advantage with the greatest number of consumers, and take measures to meet the competition of other nations in articles similar to its own. Small gains and large sales are the lines of conduct to be observed by those who wish to be successful in the extreme East. The advantage will always remain with those merchants who have been able to dispose of the greatest quantity of goods. The future will recompense them for the apparent sacrifice which they make at the beginning.

At Königsberg, in Prussia, will take place during the months of May to August of this year an International Industrial and Polytechnic Exhibition for machinery, motors, tools, appliances for mechanics, small manufacturers, &c. The following are some of the heads of groups, under which exhibits will be classified—viz., 1, motors; 2, transmission appliances; 3, tools and implements for all branches of manufacture; 4, chemical and physical apparatus; 5, apparatus for technical education; 6, safety and protective appliances; 7, machinery and appliances for household purposes and for innkeepers; 8, agricultural implements and appliances. The exhibition takes place under the authority of the Industrial Central Union of the province of East Prussia. Dr. N. Heinemann, of the New Athenæum Club, 3, Pall Mall East, has been appointed special commissioner of the exhibition for England, and will give all necessary information to intending exhibitors.

"An English Manufacturer" writes as follows to show how unfairly free trade affects his case:—I am the manufacturer of an article which is produced largely in this country and also very largely on the continent, and my brother is a London merchant importing from the continent the very same sort of article which I manufacture. My manufactory is rated very high for the support of the poor and other so-called local rates, and all my workpeople live in houses highly taxed, and those workpeople also pay very high imperial taxes. I say nothing about the taxes which I myself pay on my house in which I reside, or the imperial taxes I pay, because my brother lives in an equally good house and spends as much as I do, and therefore his personal taxation just counterbalances mine. When my article is manufactured, it goes into a warehouse and has to be disposed of to the home trade. Now my brother, when he imports his articles from France, puts them into warehouse and also has to look out for buyers as I have. But what I complain of is that the articles which my brother introduces into this country have not contributed one penny piece either to our local taxation or our imperial taxation. The ships which brought it over are not taxed, and the men who work those ships live free from local rates and imperial taxes, and yet my brother with his articles in warehouse at the wharf is quite on a par with me when I have my articles in warehouse. Up to that point I and my people have paid a vast amount of local and imperial taxation and my brother has not paid one penny. I ask, is this fair trade?

Migrations of Industry.

The migrations of industry throw a curious side-light upon the industrial and social condition of the people, and upon the influence of commerce. In former times the West of England had almost a monopoly of the manufacture of cloth, Norwich of worsteds, and Spitalfields of silk. But the glory and, what is worse, the profit has in each case departed long ago. The southern counties suffer from their proximity to the Metropolis, which absorbs the means and the enterprise of their inhabitants so fully, that little remains on which to maintain the old industries or to found new ones. Once in London, it is impossible for any individual to resist its overpowering influence; all persons are speedily drawn into the whirl of its pleasures, its professions, or its commercial life. The industries of London are many of them of a subordinate kind, not involving large outlays of capital in fixed plant and buildings; they can therefore be easily established, and quite as easily be discontinued; the hardship of such changes falling mainly upon the workers. Since the woollen trade became concentrated in Yorkshire and the cotton trade sprang up in Lancashire, a large industry of the subordinate kind mentioned above has arisen in the Metropolis, and which has been greatly stimulated by the invention and development of the sewing machine. We mean the manufacture of "Ready-made" clothing. Of late years this industry has shown a tendency to spring up in suitable centres in the country, a number of which can easily be named. As a rule, these are the localities wherein there is a considerable fund of unemployed, and consequently cheap female labour, such as in mining, engineering, and shipbuilding centres, mostly away from the manufacturing districts. Of these we may instance such places as Crewe in Cheshire, and Barrow-in-Furness in Lancashire; whilst at Wigan, on the skirt of the cotton districts, a healthy branch of this business has been established. But what is more strange is that there has recently arisen a determined effort to plant it extensively in the centre of the cotton and the woollen industries—in the districts of Todmorden and Hebden Bridge. During the last three or four months four mills or weaving sheds have been taken for the new business, and have or are being fitted in the best style for carrying it on upon an extensive scale. Those who are familiar with cotton and woollen mills and their capacity will know that this means a great extension of this business. Probably the perfect organisation and high state of discipline existing amongst employes in the cotton and woollen industries, and the efficiency and greater production that can be obtained from their employment will compensate for the higher wages that will necessarily have to be paid. But whatever the circumstances that have induced this new departure, its prospective results render the fact of sufficient importance to deserve noting and watching by those most deeply interested.

THE GAZETTE.

Adjudications of Bankruptcy.

Kierman, T. B., Wilton Hotel, Manchester Old Road, Little Heaton, Lancashire, formerly grey cloth merchant.
Saywell, A., 1, Birkland Avenue, Peel Street, Nottingham, lace maker.

Dividends.

Cudworth, W., and J. R. Cudworth, Highfield Mills, Ossett, Yorkshire, worsted spinners, 2½d. (second and final), Trustee's Office, Bradford Road, Dewsbury.

Bills of Sale.

	£	s.	d.
Gibson, T., Perseverance Place, Horton, Bradford, cotton dyer	30	0	0
Knight, W., 58, Ryan Street, Bradford, yarn merchant	50	0	0
Mason, M. W., 80, Portland Road, Nottingham, lace maker	40	0	0

Dissolutions of Partnership.

Cawthra, W. H., and J. Whitaker, 23, King Street, Huddersfield, woollen cloth merchants.
Crabtree, E., and H. Riley, Rose Mills, Oswaldtwistle, Lancashire, cotton manufacturers.

Cartwright, W., and H. Bower, Thurlstone, Penistone, Yorkshire, worsted and woollen cloth manufacturers.
Cockin, E. M., J. Lister, and R. Lister, Castle Mill, Keighley, stuff manufacturers.
Gregory, T. and J. Smith, 216, Regent Street, London, carpet merchants.
Gillett, J. H., and J. Gillett, Cowling Bridge Mill, Chorley, Lancashire, cotton spinners and manufacturers.
Handmann, L., and G. C. Grimoldby, 9, Crondall Street, Hoxton, Middlesex, silk trimming manufacturers.
Hill, C. G., and J. Wightman, Plantagenet Street, Nottingham, frilling manufacturers.
Holwell, C., and G. L. Langley, Nottingham, lace manufacturers.
Leigh, A., and W. Boswall, 107, Wood Street, London, silk agents and merchants.
Levig, R., and H. L. Euler, Bradford, wool and waste merchants.
Lunn, C., and R. B. Sharples, 20, Halford Street, Leicester, glove and fancy hosiery manufacturers.
Mitchell, C., and W. Fearnside, Bradford, Yorks., worsted manufacturers.
Oldland, G. W., and J. W. Walker, 26, Paternoster Square, London, carpet manufacturers.
Price, D., J. Greenish, and R. Ellwood, 3, Huggin Lane, woollen warehousemen.
Turner, J. and H. G. Fox, 9, Mount Street, Manchester, grey cloth agents.
Wicks, R., and A. Eaton, 16, Hamsell Street, Falcon Square, London, mantle manufacturers.
Thompson, T., and J. Baxendale, Seymour Mills, Chorley, Lancashire, cotton manufacturers.

PATENTS.

Applications for Letters Patent.

Applying a rising box at one or each end of the going part of a loom by means of tappets. J. T. Jowett, Farsley	2nd Jan.	65
Apparatus connected with drop, or change shuttle boxes of looms. A. P. Dickenson, Halifax	28th Jan.	1,198
Bushes or bearings for block and pulley sheaves. G. Hughes, London	30th Dec.	17,042
Bleaching webs or yarns of vegetable textile material. W. Mather, London	13th Jan.	471
Bobbins or spools, whereby the shell or spinning tube in cap spinning is dispensed with. J. and A. Holmes, Halifax	10th Jan.	366
Box-end for looms. J. Yates, Burnley	17th Jan.	677
Bobbins for warping mills. R. Topott, London	17th Jan.	681
Bobbins used in making thread, silk, cotton, &c. E. A. Richards, Birmingham	29th Jan.	1,255
Combing wool, cotton, &c. J. C. Walker, London	8th Jan.	273
Carding engines for cotton, &c. S. Tweedale, Halifax	12th Jan.	396
Covered cotton or other cores, and apparatus therefor. J. A. Sparling, London	19th Jan.	732
Colouring the edges or selvages, and imparting stripes of colour to velvet, &c. E. Weild, Chorlton-on-Medlock	20th Jan.	791
Checking the shuttle in looms. E. Hollingworth, Halifax	22nd Jan.	922
Caps employed in roving, spinning, and twisting fibrous materials. J. C. Rouse, Halifax	24th Jan.	1,022
Cutting the pile of fustians, cords, velvets, &c. John Platt, Manchester	26th Jan.	1,073
Cop shuttles for power-looms, or pirn shuttles for power-looms. D. McGregor, Dundee	26th Jan.	1,064
Driving the spindles of machines for spinning and doubling cotton, &c. J. W. Dawson and H. Simpson, Manchester	10th Jan.	337
Dyeing or washing hanks of yarn, cord or braid. E. Boden, Manchester	17th Jan.	674
Driving belts. H. Simon, London.	1st Jan.	55
Dyeing yarns by a specially prepared apparatus. J. Midgley, Shipley	27th Jan.	1,127
Dress and mantle cloths. H. and J. Benn, London	29th Jan.	1,280
Ensuring uniform tension of warp threads of looms. H. Gardner, London	13th Jan.	483
Embroidering machines. E. Cornely, London	20th Jan.	793
Embroidering machines. H. J. Haddan, London. A communication	20th Jan.	817
Embossing, printing, or otherwise producing designs on tissues, fabrics, &c. E. J. Homan, Manchester	22nd Jan.	918
Embroidered fabrics. E. Reichenbach, London. A communication	22nd Jan.	935
Engines for carding the fleece of wool, &c. T. Chadwick and H. Thornton, Rochdale	28th Jan.	1,200
Fine alpaca fabrics for covering umbrellas. S. C. Lister and H. G. Tetley, Bradford	24th Jan.	1,058
Garnett or saw teeth for opening or preparing fibrous materials. J. Hardy, Halifax	6th Jan.	179
Holder for spools, bobbins, &c. A. Barr, Glasgow	16th Jan.	619
Improvements in machinery for single woven fabrics by means of contact with moving or stationery metal surfaces heated by gas or by direct contact with gas flame. T. Schofield and F. Barker, Cornbrook, Manchester	20th Jan.	783
Lace-clipping machine. J. H. Johnson, London. A communication	31st Dec.	17,109
Looms. H. Bradbury, London	13th Jan.	467
Looms. P. Young and J. Mathieson, London	15th Jan.	596

Looms for double cloth, and apparatus connected therewith for cutting pile. T. Hollings and W. Hall, London	10th Jan.	378
Loom warp beam weighting and letting off motions. J. Hudson, Halifax	23rd Jan.	961
Linoleum, and machines therefor. M. Hoffbauer, London	28th Jan.	1,208
Looms for figured velvet carpets and such fabrics. J. Imray, London. A communication	29th Jan.	1,285
Metal belting for machinery F. T. K. Firmin, Liverpool	31st Dec.	7,0741
Mounting and operating or moving the guide wires of machinery for spinning or doubling fibres, whereby certain appliances are dispensed with. S. Tweedale, Halifax	1st Jan.	3
Machinery for making helical springs. L. Sterne, Glasgow	6th Jan.	181
Measuring and indicating the length of yarn. A. Hitchon, Halifax	26th Jan.	1,062
Machinery for Chenille thread. C. A. Day, London	Jan. 29th	1,274
Manufacture of cotton yarn. I. H. Russell, London	Jan. 29th	1,303
Nosing motions of winding-on motions for self acting mules and twiners. B. A. Dobson and R. C. Tonge, Manchester	22nd Jan.	911
Oscillating shuttle guard for preventing shuttles from flying. G. Bradley, Oldham	14th Jan.	513
Oil cans or feeders. J. Chapman, London	10th Jan.	357
Operating or moving the guide rails and guide wires of machinery for spinning and doubling fibres. S. Tweedale, Halifax	1st Jan.	2
Operating the lap-forming carriage in "Blamire's" feeding machines. J. Porritt, Halifax	29th Jan.	1,253
Preventing ends of rugs, mats, carpets, &c., from being unequally cut when passing through cropping or shearing machines. J. Beever, Halifax	3rd Jan.	104
Picking straps for looms, to be known as "Eclipse" Picking Strap. T. Fryer and J. W. Bairstow, London	13th Jan.	458
Preventing "traps" in looms. D. Greenhalgh, Halifax	15th Jan.	566
Printing and dyeing cotton fabrics. F. A. Gatty, Manchester	10th Jan.	346
Removing nap, fly, &c., from yarns, &c. W. Banks, London	6th Jan.	193
Reproducing ornamental designs. J. Bryce, Glasgow	12th Jan.	386
Regulating the shuttle boxes in looms. D. Crabtree, London	26th Jan.	1,110
Rendering fabrics, &c., unflammable, obnoxious to vermin, resistant to putrefaction, to the reception of morbid or diseased matters, and to the growth of spores, fungi, bacteria, &c. W. L. Wise, London. A communication	28th Jan.	1,232
Ready-bringing into juxtaposition of colours, coloured materials or samples, entitled colour-wheels or sample-wheels. T. R. Arlett, Blackheath, Kent	29th Jan.	1,246
Shuttle tongues. T. Felton and R. Bleasdale, Manchester	30th Dec.	17,013
Self-acting apparatus for lubricating shafting. E. Whiteley, Halifax	31st Dec.	17,064
Spindles for spinning machinery. J. W. Shepherd, W. Ayrton, and C. Siddall, Manchester	1st Jan.	6
Securing shuttle pegs into shuttles for looms. A. Greenwood, Halifax	3rd Jan.	103
Spooling, winding, and doubling machinery. J. H. Burton and H. Sands, London	3rd Jan.	123
Spinning cotton yarn, and certain new machinery therefor. T. T. Abbot, London	5th Jan.	163
Spinning and doubling cotton, &c. T. Ashworth, Manchester	12th Jan.	383
Shuttle boxes of looms (controlling). R. L. Hattersley and J. Hill, Keighley	17th Jan.	666
Spindle and flyer apparatus. W. C. and J. H. Whitehead, Leicester	19th Jan.	730
Separating, washing, and drying fibre from peat. F. Baird, London	21st Jan.	860
Split cotters. E. Hollingworth, Halifax	22nd Jan.	919
Scorching and finishing yarns and threads of silk, &c. A. Thompson and R. O. Ritchie, London	22nd Jan.	946
Spreading and drawing hemp, &c. A. V. Newton, London. A communication	27th Jan.	1,154
Travellers for machinery for spinning and doubling cotton, &c. P. and R. and J. Eadie, Manchester	19th Jan.	739
Travelling rugs. H. J. Haddan, London. A communication	6th Jan.	196
Traverse net or lace on twist lace machines, and apparatus therefor. A. C. Travell, Nottingham	15th Jan.	594
Vegetable fibres for the extraction of extraneous matters therefrom. J. Smith and P. W. Nicolle, London	31st Dec.	17,083
Washing, scouring, bleaching, dyeing, steaming, drying, and otherwise treating fibrous materials in the form of slubbing slivers, rovings, or yarns. H. Giesler, London	2nd Jan.	86

Winding yarn. B. A. Dobson, Manchester	13th Jan.	429
Woven fabrics. H. Benn, London	13th Jan.	488
Wet spinning frames. J. B. Pirrie, Carrickfergus	15th Jan.	577
Warp-lace machinery. W. Dore and J. Gee, London	28th Jan.	1,227
Wooden chain belting for machinery. F. T. K. Firmin, Liverpool	29th Jan.	1,250
Washing or scouring wool, &c. H. J. Haddan, London. A communication	29th Jan.	1,277

Patents on which the Seventh Year's Renewal Fee of £10 has been paid.

Spinning and doubling cotton, &c. J. Donn, Oldham	12th Jan., 1878.	156
Treatment of paper and woven fabrics. A. E. Healey, Willesden Junction	14th Jan., 1878.	174
Looped or terry fabrics. J. McCabe, Droylesden	30th Jan., 1878.	387

Patents on which the Fourth Year's Renewal Fee of £10 has been paid.

Carding engines, for long wool, &c. P. L. Klein and G. Hundt, Dusseldorf	10th Jan., 1881.	116
Piecing doubled yarns, or yarns consisting of two or more strands, and apparatus therefor. G. Balfe, Stockport.	20th Jan., 1881.	250
Process of, and apparatus for sizing, drying, warping, or beaming worsted, wool or other warps or threads, particularly tender or fine wools. C. Anderson, Leeds	15th Jan., 1881.	211
Simplyfying the operations for perforating jacquard cards, and means for economising the production of figured textile fabrics. T. G. Lomas, Withington	10th Jan., 1881.	110
Spinning and doubling cotton, &c. J. Hodgkinson, Bolton	31st Jan., 1881.	411
Sizing machines. H. Livesey, Blackburn	22nd Jan., 1881.	285
Velvets and pile fabrics in imitation of sealskin, &c. C. Lister, Huddersfield	21st Jan., 1881.	268

Patents on which the Stamp Duty of £100 has been paid

Looms. W. H. Hasking, Bury	11th April, 1878.	1,449
Carding engines for felt. J. Ashworth and C. Payant	22nd Dec., 1877.	4,868
Combing wool, cotton, &c. C. Whitehead, Holbeck	12th Feb., 1878.	583

Patents Sealed.

1,008	1,997	6,307	7,021	10,585	311	369
421	940	1,727	3,891	4,993	6,335	12,732
643	973	1,456	1,461	1,481	1,545	2,163
2,245	11,877	536	956	13,287	13,301	133
1,423	1,862	2,017	2,232	6,838	13,073	506
1,051	1,654	2,372	2,545	8,258	8,571	507
2,582	2,837	4,331	7,035	13,658	13,751	13,784
499	502	744	2,138	2,235	2,300	2,648
2,929	3,088	3,670				

Complete Specifications Accepted.

4,650	4,848	5,207	15,836	15,853	3,193	4,687
4,742	4,756	4,859	5,021	5,103	6,454	8,480
13,275	16,039	932	4,975	5,053	5,160	5,640
12,257	13,208	14,659	15,537	15,747	16,013	4,675
4,899	5,753	1,585	4,994	5,084	5,110	5,114
5,123	5,268	5,292	5,597	5,459	6,882	14,987
1,877	4,054	4,678	4,681	4,688	5,168	5,235
5,274	5,300	5,469	7,722	3,917	4,769	5,289
5,398	5,471	5,700	5,752	5,853	5,857	6,000
8,756	16,801	3,177	4,914	5,754	6,277	16,708
16,782	4,616	6,020	6,043	6,084	6,107	6,203
6,272	6,289	6,291	7,721			

Provisional Specifications Accepted.

16,094	16,356	14,651	14,908	15,466	15,609	16,146
15,866	15,933	16,459	16,739	16,446	16,474	16,492
16,503	16,590	16,838	14,653	15,623	15,979	16,449
16,658	16,664	16,773	16,824	16,990	13,896	14,126
16,508	16,543	16,611	14,663	15,149	16,233	16,663
16,723	16,828	16,837	16,936	17,013	17,074	55
14,534	16,677	17,083	3	6	163	179
15,214	16,392					

The Journal of Fabrics

AND

Textile Industries.

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Notices.

The Half-Yearly Subscription—payable in advance—including home postage, is 3s. 6d., Cheques and Post Office-Orders to be made payable to H. & R. T. LORD, 10, Ann Place, Little Horton Lane, Bradford, Yorkshire.

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Readers are invited to forward items of interest to the Trades concerned.

The Proprietors will feel greatly obliged if any of their readers, in making enquiries of, or opening accounts with, Advertisers in this paper, will kindly mention the *Journal of Fabrics and Textile Industries* as the source from whence they obtained their information.



The Associated Chambers of Commerce.



THE proceedings of the Annual Meeting of the Associated Chambers of Commerce were commenced on the 24th ult., at the Westminster Palace Hotel, London, under the presidency of Mr. C. M. Norwood, M.P. Hull. A large number of delegates were present from the various Chambers of Commerce.

THE ANNUAL REPORT.—The report of the Executive Council, which was taken as read, contained an account of the work of the Council during the past year. With reference to our commercial arrangements with Spain, the report expressed the hope that the result of the signature of the declaration by the representatives of the two countries would be to restore British trade with Spain to most-favoured-nation treatment, and that there was some prospect that modification might be obtained of duties in the Spanish tariff, such as those on mixed woollens, which pressed heavily on British goods, while they favoured those of other countries. The Council also thought that the result of the Berlin Conference on the Congo question would show that the efforts of merchants trading with the West Coast of Africa to maintain freedom of trade with the native tribes have been to a large extent successful.

RAILWAY RATES.—Resolutions in reference to bills, notice of which had been given by the leading railway companies for the present session, had been put upon the notice paper, but were withdrawn in favour of the following amended resolution:—

“That this association, finding that by these bills the railway companies propose not only to increase considerably their maximum rates, but also to legalise terminal charges, subject only to a costly and troublesome

appeal to the Railway Commissioners, urges upon each Chamber interested the importance of at once giving notice, under the new standing orders, of their intention to oppose one or all of them in Committee, and it also authorises the Executive Council to take whatever steps it may deem best to prevent these bills being read a second time. The association also trusts that the consideration of these bills will not be suffered to delay the passing of an act which, in conformity with the resolution adopted at the last meeting of the association at Wolverhampton, shall be confined to perpetuating and enlarging the powers of the Railway Commission, and to giving Chambers of Commerce and Agriculture and Town Councils a *locus standi* before the Commissioners.”

The resolution was carried unanimously. At a subsequent stage a special committee was nominated and approved. A resolution requesting the Executive Council to secure the reappointment of the Select Committee on Canals, with a view to this committee reporting in the session of 1885, was carried *nem. con.* Another resolution was carried urging the association to promote a bill for establishing public trusts to purchase canals, and free them from the power of railway companies.—With reference to depression in trade, Mr. Hare (Bristol), moved:—

“That, seeing the long-continued general depression in trade, the want of employment among the working classes, and the falling-off of the export foreign trade, the Government be memorialised by the association to recommend her Majesty to appoint a Royal Commission to inquire into the causes.”

After a somewhat lengthy discussion, during which it was urged that our Government should follow the example set by some other nations, and make the most of the splendid opportunities she possesses to open out new markets for her surplus manufactures, the motion was rejected.

FOREIGN JUDGMENTS.—The Associated Chambers unanimously adopted a suggestion of the Bradford Chamber to urge upon the Government to instruct its representative at the Conference suggested by Italy on foreign judgments to bring about an agreement between the Powers as to the principle on which the question should be determined. The Bradford Chamber suggested that it should be settled by international agreement, that the place or country in which a contract had been made binding in law shall be that in which the action for breach of contract shall be enforced by legal process, and that the decision of such court shall be enforced by the tribunal of the defendant in case the judgment should be adverse to him.

THE CONGO.—A resolution urged that in any negotiations on the Congo question the British Government should protect all the territorial, commercial, or trading rights which the United Kingdom has hitherto enjoyed on the Congo and Niger Rivers and adjacent countries.

REGISTRATION OF DEEDS OF ARRANGEMENT.—The President stated that the Board of Trade had the amendment of this Act under consideration, and that it would be necessary only for the Executive to transmit to the Board whatever resolution they adopted. The following was then carried unanimously:—

“That the registration of all private arrangements should be made compulsory, as bills of sale are, otherwise they should be declared illegal; and that the Executive Committee be requested to transmit this resolution to the Board of Trade.”

MINISTER OF COMMERCE.—Mr. Woolf (Hull) moved the following resolution on the subject:—

“That this association, in reaffirming the resolutions passed at previous meetings, desires that the Executive Council should take measures for carrying into effect the resolutions of the House of Commons of 1879 and 1881, for the appointment of a Minister of Commerce and Agriculture, with a seat in the Cabinet.”

The resolution was carried. In relation to the same subject, Mr. Pim (Dublin) moved a resolution in favour of a reconstruction of the Board of Trade, such as would make it more widely representative of the commercial interests of the country. The resolution was carried unanimously.

NEW MARKETS FOR BRITISH TRADE.—Mr. Murray (London), moved the appointment of a committee, to consider and report to the association at its next meeting as to the necessity, and, if any, as to the best manner of providing new markets for the extension of British trade. The resolution was carried.

PARCEL POST.—The Bristol Chamber submitted a resolution in favour of a more graduated scale of weights under 7 lbs., and also of a more prompt delivery. Upon the suggestion of the Sheffield Chamber, an addition was made in favour of the adoption of a reasonable scheme of insurance, and the motion was adopted.

The Article on “Ornamentation of Fabrics” is held over this month.



Bleaching.

Bleaching is the process by which the colour of bodies, natural or acquired, is removed, and by which they are rendered white or colourless. It is more particularly applied to the decolourisation of textile filaments, and of cloths made of them.

Bleaching is a very ancient art, as passages referring to it in the earlier sacred and other writers fully testify. It had, probably, reached a high degree of excellence among the inhabitants of the first Assyrian empire, and was certainly practised in Egypt long before the commencement of written history. We may fairly assume that fine white linen formed part of the "raiment," which, together with "jewels of gold and jewels of silver and precious things," Abraham sent as presents to the beautiful Rebekah and her family, fully three centuries and-a-half before the Exodus. Subsequently, in Scripture, we have special mention of "fine linen, white and clean." Herodotus, the earliest Greek historian, tells us that the Babylonians wore "white cloaks;" and in Athenæus we read of "shining fine linen," as opposed to that which was "raw" or unbleached. At this early period, and for many centuries afterwards, the operations of washing, fulling, and bleaching were not distinctly separated. The common system of washing, followed by drying in the sun, adopted by the ancients, is a process which of itself, by frequent repetition, decolourises the raw materials of textile fabrics, and thus must inevitably have taught them the art of "natural bleaching" of a character similar to that practised in Europe up to a comparatively very recent period. And this appears, according to the authority of ancient authors, to have been the case. Washing or steeping in alkaline and ammoniacal lyes, or in milk of lime, followed by exposure in the sun, formed the chief basis of their system: whilst woollens, then as now, were treated with soap and fuller's earth, or with potter's clay, marl, limonian earth, or other like minerals. Urine was highly esteemed among them; and we are told that, in the time of the Emperor Vespasian, and undoubtedly long before, cloths were sulphured. Indeed, according to Pliny, sulphuring was often had recourse to in ordinary washing, as well as in the bleaching process. Bleaching continued to be practised with no essential change of its principles until the discovery of chlorine, to which we shall presently refer. Though the art of bleaching dates from the remotest ages, little or nothing was known of it in Great Britain as an art, until within a century, and it was then the custom to send the linen manufactured in Great Britain over to Holland, as the inhabitants of that country were at this period considered the most superior bleachers in Europe. An account of the method which the Dutch adopted at their great bleach works near Haarlem, is described by Mr. F. Hodges, junior, in his "Chemistry for Bleachers." It consisted in steeping the goods in a lixivium or lye made from the lye-ashes of Russia, and in which other cloth had been steeped; afterwards they were steeped in a new lye of lye-ashes poured upon them boiling hot. In this solution they were left for some days, after which they were washed and pressed, and then steeped in a sour made either by the fermentation of bran and water or buttermilk. The souring usually lasted from six to seven days, after which the linen was washed, and then spread upon the grass to bleach by exposure to light, air, and moisture. The bleaching grounds were cut with canals in different places, from which the linen was watered with long narrow shovels made in the shape of a scythe; the water of these canals came from the sand downs, and to the beneficial effects derived from it was mainly attributed the superior lustre of the Dutch cloth; indeed, it was long a prejudice on the Continent that no water was so good for bleaching as sea water. This process usually required from six to seven months for its completion, and the goods bleached by it were sold under the name of Dutch cloth or Hollands. Another variety of linen bleached at Haarlem, which from its fineness was generally spread out on the better grass fields or lawns, received the title of lawn. Several authorities relate that in 1749 an Irishman named Dunlop, who had learned something of the nature and art of bleaching, settled in the north of Scotland, and established works for the purpose of bleaching Scotch goods; and though for some years he failed to bleach the goods entrusted to him satisfactorily, in a few years he became an excellent practical bleacher, and from that time no more goods were sent to Holland for the purpose of being bleached. The art, when introduced into Great Britain by this enterprising Irishman, is described as not differing in the smallest degree from the method employed by the Dutch, from whom it was copied. It consisted of steepings and boilings in alkaline lyes, called bucking, then washing and exposing on grass, called crofting; these operations were repeated several times, reducing the strength of the lyes every time. The linen was then steeped in sour milk for some weeks, after which it was washed clean and crofted. This process was repeated as often as was required to produce a pure white. The first improvement in this tedious process occurred after the introduction of a new method for the manufacture of sulphuric acid by Dr. Roebuck, which greatly reduced the price of that acid. The improvement consisted in the substitution by Dr. Francis Home, of

Edinburgh, of water acidulated with sulphuric acid, as a sour for the buttermilk hitherto employed; this reduced the time required for souring from weeks to days, not to mention the absence of the risk with which the use of the milk was accompanied, as sours of this description were very liable to corruption. Little further change took place in the art of bleaching until about the year 1787, when a most important improvement was effected in consequence of the discovery, in the year 1774, by Schelle, the celebrated Swedish chemist, of a substance which he called dephlogisticated marine air. The French chemist, Berthollet, in 1875, repeated the experiments of Schelle on this new substance, and showed that it was a gas soluble in water, to which it gave a yellowish green colour, an astringent taste, and the peculiar smell by which it is distinguished. Owing to Berthollet's experiments, this body was known until the year 1810 as oxygenated muriatic acid, or oxy-muriatic acid, into which it was shortened; but in that year Sir H. Davy, adopting the idea of Gay-Lussac and Thénard, who had experimented with it, that it was an elementary substance, called it chlorine, owing to its peculiar colour, by which name it is known at the present day. Berthollet's ideas, and the result of some experiments which he made in bleaching linen with the gas, were mentioned by him in a paper which he read before the Academy of Sciences, at Paris, in 1795, and published in the *Journal de Physique* for May of the same year. He also published a paper in the number for August, 1786, of the same journal, explaining the nature of the action of chlorine on vegetable colours, and showing how it could best be employed. Parkes, in his "Chemical Essays," relates how a Mr. Copland, Professor of Natural Philosophy in Aberdeen, while on a visit to Geneva, was shown by Professor de Saussure of that town, the experiment of discharging vegetable colours by chlorine gas. The Aberdeen Professor, having been impressed with the importance of the experiment, communicated it on his return home to some eminent manufacturers, the Messrs. Milnes, of the firm of Gordon, Barran and Co., of Aberdeen, who immediately entered upon a course of experiments in the preparation of the gas, and the best manner of employing it in bleaching, and obtained satisfactory results. Parkes states that this was about the end of July, 1787, and was, he believes, the first actual application of the then so-called oxy-muriatic acid in Great Britain. With this statement, however, other authorities on the subject do not agree, and it seems with some truth. Mr. F. Hodges, jun., in his "Chemistry for Bleachers," goes fully into the whole subject, and the weight of evidence which he brings to bear from numerous quarters goes far to prove that the distinguished engineer James Watt, if not the first, at least is entitled to the honour of having introduced it at as early a date as Professor Copland. Watt learnt the process of manufacturing and using chlorine from Berthollet in 1786, and shortly after introduced the process on a large scale into his father-in-law's (Mr. MacGregor) bleach works at Glasgow. Watt laid the results of the employment of this gas in bleaching at Glasgow, before the Manchester manufacturers. In enforcing the importance of the new substance and process on these gentlemen, he was ably followed and seconded by Mr. Thomas Henry, F.R.S., of Manchester, and it is related how this gentleman and Mr. Watt unreservedly described to each other the result of their experiments. To Mr. Henry we are indebted for the introduction of the new art into Lancashire. Watt made several improvements in the art, one of which was that instead of employing muriatic acid and manganese, as had been done by Scheele and Berthollet for the production of the gas, he used a mixture of common salt, black oxide of manganese and sulphuric acid, which was much cheaper. He also invented a method of testing the strength of the water impregnated with chlorine, so as to estimate its bleaching power. This he did by taking a known quantity of infusion of cochineal, and ascertaining how much of the bleaching liquor was necessary to destroy the colour—the larger the quantity necessary, the weaker obviously was the bleaching solution. Chlorine, when first introduced, was used in the state of gas, and one great drawback to it was its noxious odour, which is not only very disagreeable, but exceedingly injurious to health. To Berthollet we owe the credit of being the first to remedy many of the defects of bleaching by chlorine, as, while visiting Javelle for the purpose of showing some bleachers the method of using the gas, he added a little potash to prevent the gas from impairing the goods. Not long after this, these bleachers announced in different journals that they had discovered a new bleaching liquor, which they called the "Lye" or "Eau de Javelle," and applied to the British Government to grant them the exclusive right to supply the public with it, but in this they were defeated, as it was shown that the same article had been in common use in Great Britain for some time, which fact prevented them from obtaining a patent, and consequently the liquor of Javelle, which thus became the property of the public, turned out to be nothing but a solution of potash in water impregnated with chlorine, as was proved by Berthollet shortly after its pretended discovery. After the failure of the foreigners to obtain a monopoly of the Lye of Javelle, other bleachers learnt to make it for themselves, and continued to use it for some time. Though this bleaching liquor had some advantages over the solution of the gas in water, they were more than counterbalanced by the disadvantages, such as its being less economical than the solution of chlorine in water, and its not keeping any length of time without losing its bleaching properties. On account of these disadvantages, its use was not long continued.

The next attempt to improve on this bleaching solution was made by Mr. Henry, of Manchester, to whom we have before referred, who is

said to have first thought of the addition of lime, but owing to his manner of employing it, which was open to many objections, it did not come into use. Other attempts were made by different persons to improve on this process, but none succeeded till Mr. Tennant, after long and laborious investigation, hit upon a method of making a saturated liquid, composed of chlorine and lime, for which he took out a patent in the year 1798. This patent was pronounced invalid, and unjustly so, as many authorities consider. But Mr. Tennant was not so easily defeated, for in the following year, 1799, he took out another patent, which may be considered the completion of the new method. This patent consisted in impregnating quicklime in a dry state with chlorine. As the originality of this invention was not disputed, and as its great superiority over all methods previously introduced was obvious, the demand for the product has gone on increasing, year by year, up to the present date. The "new or continuous process" of bleaching, as it is called, and that which is at present in general use in all the chief bleach works of Lancashire, was introduced by Mr. David Bentley, of Pendleton, and patented by him in 1828. Bleaching is commonly said to be natural when exposure to light, air, and moisture, forms the leading part of the process; and to be chemical when chlorine, or any of the hypochlorites, or sulphuric acid, or other like substances, are employed. In some cases, as with linen, the two processes are combined.—*Churchill's Technological Handbook: Bleaching, Dyeing, and Calico Printing.*

The Manufacture of Mixed Yarn.



THE *Leinenindustrie* contains the following details of the manufacture of mixed yarn:—Immense quantities of dry-spun yarn, under the name of "Mixte yarns," which are exported to all the neighbouring countries, and are used for sacks and pack-linens, are manufactured in France and Belgium. As far as we know, these yarns are not spun either in Germany or Austria, and a condensed review of their manner of production might not be out of place. The "Mixte" (French) or "Mixed" (English) yarns are, as is already indicated by their names, composed of different materials, viz., either of flax-tow and jute or of hemp-tow and jute. In tenor with the optional addition of hemp or flax-tow, these mixed yarns are divided into light and dark, but as their methods of manufacture are different, it is necessary to explain each separately. The dark mixed yarn is generally manufactured from two parts jute and one part flax-tow, although these mixing proportions sometimes vary to half and half, if a greater strength of the yarn is required, at a correspondingly higher price. The jute necessary for this purpose is picked out when sorting jute, and consists of all yellow, brown, silver coloured, and other "off-coloured" material. The information that this "off-coloured" jute, which every manufacturer knows to his cost, especially when he has to spin a pure white yarn from such material, can be employed for other purposes will be received by him with feelings of satisfaction, we are sure. If the mill produces large quantities of dark mixed yarns, the supply on hand, consisting of the refuse material, will, of course, not be enough, and he will have to buy the dark jute. This refuse dark jute is next subjected to the batching process, that is, a medium handful is placed in layers, and each single layer is sprinkled. For jute yarns, generally, are used for 100 kilograms raw jute, 18 kilograms water, 3 kilograms train oil, and 3 kilograms petroleum, care being taken that the latter two ingredients are as light of colour and free from odour as can be had; but for these dark mixed yarns, although the same proportions and ingredients are retained, it is immaterial whether they are light; but as it is necessary that these mixed yarns be of a fairly dark colour—they must be of a dark silver-gray, of the colour of flax-tow yarns—wherefore, they must be slightly dyed. For this purpose, a corresponding quantity of extract of logwood solution is first stirred into the water, after which an alum solution is added, whereby the colour of the mixture becomes deep blue. Each single layer of the jute in the batching-box is first wetted with this colour solution, after which the train oil and oil mixture are poured over; the next layer of jute is then placed on, again moistened in the described manner, and this is continued until the batching-box is full. When the jute has remained in this manner in the box from thirty-six to forty-eight hours, according to the season, it is taken out, passed through the softener, taken to the shell-breaker card, and carded in the ordinary manner. The flax-tow to be added must also be dark of colour and strong of fibre; besides these two characteristics, it may possess all the

possible bad qualities—it is desirable, in fact, that it should—only, it must possess the requisite of being cheap, and the low grade Russian tow would be very suitable, because it complies with this one great desideratum—cheapness. The flax-tow is also by itself carded upon the shell-breaker card, and the resulting slivers are then united with those of the jute-tow upon the finisher card. They are joined either in the lap machine, by taking two jute and one flax-tow sliver, or when the mill has no lapping machine, then by feeding two jute slivers with one flax-tow sliver to the finisher card. The slivers issuing from this card are already mixed in correct proportions. When this yarn is to be produced in spinning mills that are not provided with jute cards, but with flax or hemp-tow cards, it becomes necessary to first willow the jute, and it is then fed as jute-tow to the finisher card. In this case, however, it is necessary to let the lowest three pairs of rollers of the last named card stand idle during work, so as not to have much waste. The flax-tow is carded in precisely the same manner, and the two jute slivers and one flax-tow sliver are united in the first frame. The yarn produced in this manner is of a dark silver-gray colour, of a soft and strong "feel," of considerable strength, and still contains much flax chaff—in short, it very closely resembles the dry spun flax-tow yarn; this mixed yarn must be twisted a little sharper than that of jute. It will be found to make an excellent substitute for the dry spun flax-tow yarn, which it makes a great deal cheaper, owing to the cheapness of the materials used; and it cannot be said that it is a production for the sake of fraud, this class of yarns being invariably labelled "Mixte" or "Mixed yarns." They are at present spun from Nos. 3 to 7 for warp and filling, and the price for these is the same, and about two years ago it was, per kilogram (2 pounds 3¼ ounces): No. 3, 14½ cts.; No. 4, 15¼ cts.; No. 5, 16¼ cts.; No. 6, 17 cts.; No. 7, 17½ cts. The bright mixed yarn is also composed of two-thirds jute, but with an addition of one-third pale yellow or white hemp-tow. The chief characteristic must be that it be as light in colour and as close in appearance to hemp-tow yarn as possible, wherefore only the lightest of jute can be employed for the purpose. The process of batching is exactly as with pure jute, and train oil and oil, which must be nearly devoid of smell. The hemp-tow, also, must be as light coloured as possible, although it may be full of chaff. The other processes are similar to those explained for dark mixed yarns. Of course, the prices for these yarns are correspondingly higher.

Codification of Commercial Law.

On Wednesday, 25th ultimo, the Lord Chancellor received a deputation from the Association of Chambers of Commerce, who urged the Government to appoint a Royal Commission to inquire into the expediency of the codification of the commercial law. Mr. Monk, M.P., Mr. Tritton, and Sheriff Dove Wilson having spoken, the Lord Chancellor said that there was more difficulty about the matter than the deputation seemed to anticipate. There were certain subjects comprehended under the general category of commercial law, which, from their nature, admitted of being reduced to a system without difficulty, such as bills of exchange and promissory notes; and the law of merchant shipping was practically codified, as well as the law of bankruptcy and joint-stock companies. But to take other subjects, such as the law of contracts and agency, there would be great difficulty in codifying such subjects. An attempt had been made to codify the criminal procedure of the country, but it was difficult, with so many lawyers in the House, to get such a Bill through. Those gentlemen thought they had something to say worth hearing, and, considering the time at the disposal of the Government, it seemed almost impossible to do anything in the matter. At the same time, private Members might attempt the codification of the law of insurance, for instance, which admitted of being dealt with; but the larger scheme advocated by the deputation was not feasible. With regard to the inconvenience felt by the conflict of English and Scotch law, as Scotchmen were very tenacious of their own legal system, any change had better originate in Scotland. The Government would be quite willing to consider any well-considered scheme for dealing with codifications in detail, but not *en bloc* as proposed.



The Importance of Good Water for Manufacturing and Dyeing Purposes.

(Continued from Page 16.)

The hardness of water depends on the amount of earthy matter present, whether lime, magnesia, iron, or alumina. This is best estimated by the "soap-test," which is performed as follows:—A solution of soap is made by mixing methylated spirit (free from shellac) with an equal measure of water, and adding a convenient quantity of soap—preferably the soft medicinal soap of the London Pharmacopœia—and letting the mixture stand in a stoppered flask or bottle at common temperatures till the soap is dissolved, and the liquid has grown clear. If at all turbid it may be filtered, and is then preserved in a stoppered bottle. To find the value of this soap-solution, a standard water is needed. To prepare this, rub some pure crystallised gypsum (sulphate of lime) to a very fine powder; put 27·5 grains of this in an exact gallon of pure water, and let it dissolve. This quantity is equivalent to 16 grains of carbonate of lime, and hence the water was called by Clark, the inventor of the process, "standard water of 16 deg. hardness," every grain of carbonate of lime, or its equivalent of other hardening matter, being called 1 deg. of hardness. When the standard water is ready, 1,000 grain measures are put in a 6-oz. stoppered bottle, and 40 grain measures are added of a cold saturated solution of carbonate of soda crystals. A burette should have been filled with the soap solution, and this is carefully dropped into the bottle until the point of saturation is reached. To ascertain this the bottle is from time to time stoppered and well shaken. As soon as a soft and abundant lather is formed which will remain for five minutes, the operation is at an end, and the number of degrees consumed is read off. It is most convenient, as saving calculation, if 32 deg. of the soap-liquor have been used, in which case 2 deg. of the burette represent exactly 1 deg. of hardness. The value of the soap-liquid thus being known, it may be applied to testing waters. 1,000 grain measures of the sample are placed in a bottle, mixed with 40 grain measures of the carbonate of soda solution, and the soap-liquid added as above. If the hardness of the water exceeds 16 degs., it is well to dilute it previously with an equal or double bulk of distilled water; then take 1,000 grain measures of this diluted portion for examination, remembering to multiply the result obtained by 2 or by 3, according to the extent of dilution. This method shows with great exactitude the value of a water for cleansing and scouring purposes, it being of course the better the less soap it needs to yield a lather. For dyeing and printing, and for extracting colours, it may also be laid down that a very hard water cannot be good, save for sad colours. But a very soft water, if heavily charged with alkali, may be wretched for tinctorial purposes, and two waters equally hard may be of very different values for dyeing, according as the hardness proceeds from lime, magnesia, alumina, or from iron. In all cases it is well, after having ascertained the hardness of the water cold, as taken from the stream or spring, to boil another portion well and test it again. If a difference is found, as is generally the case, that difference is caused by lime or magnesia, present in the form of bicarbonate, and rendered insoluble by boiling. The hardness remaining *after* boiling is due to sulphates and chlorides of lime, magnesia, etc., and is noted as permanent hardness. By this double procedure we ascertain not merely the amount of the hardening matter, but to some extent its nature, and how it may be removed. To supplement the soap-test the following procedure may be employed, and will be found very useful in ascertaining the comparative value of waters for tinctorial purposes: Make a standard extract of logwood by digesting distilled water upon an excess of rasped logwood in a stoppered flask for 24 hours. Pour off the clear and preserve it in a stoppered bottle. If it is needful to examine a number of samples of water, provide a set of clear white glass phials holding a little more than 4 ozs. Put into one phial 4 ozs. of distilled water and add 100 grain measures of the logwood liquor. Place 4 ozs. of each sample in one of the other bottles, and add 100 grains of logwood liquor to each, and compare the colours. The phial with distilled water will be of a clear reddish amber colour. The others will depart from this standard according to the nature and amount of their impurities. If the water contains a soluble chloride it will be yellower than with pure water. Sulphate of lime and alkaline sulphates give a yellowish olive colour. Alkalies, caustic or carbonated, give a brownish red; salts of alumina, a maroon passing into plum-colour; free acids, a cherry; and salts of iron and chromates, a brownish black. Even the quantities of these various impurities may be approximately estimated by preparing solutions containing known quantities of the salts in question and comparing their action, at various stages of dilution, upon the logwood liquor with that of the water under examination.

PURIFICATION.—The purification of water on a practical scale is in some cases exceedingly difficult and in all expensive, owing to the amount of room required. The available expedients are three—subsidence, filtration, and liming. The action of the two former is very

nearly connected. Subsidence is merely a carrying out of a fact observed in nature, that rivers are usually found freer from mineral impurities than the springs whence they are fed. This is readily explained: the action of exposure to the air, especially in shallow extended layers, is similar to that of boiling. Bicarbonates are decomposed, and free carbonic acid escapes, whilst the neutral carbonates of lime, magnesia, and iron subside in an insoluble state. Again, all soluble protosalts of iron are decomposed, the bulk of the objectionable metal remaining behind in the form of insoluble subsalts. All matters also, mineral or organic, held merely in suspension, are removed. The best arrangement for subsidence, and at the same time the first step to filtration, is a reservoir, having its greatest length in the direction of the current. It should not be very deep, but as extensive as the ground and the owner's means will admit. At the top end it must be provided with a sluice, so that the water of the stream can be admitted only when desirable. If there are any works above which emit refuse, it is well to admit water to the reservoir only in the night and on Sundays, and to keep a watchful eye on the stream.

FILTRATION.—Filtration consists, in principle, in passing water through porous matter, which shall by mechanical action arrest all insoluble suspended matter, and shall also exert a chemical action by means of the oxygen condensed in its pores. The bed of a filter should commence with coarse large irregular stones, over which is laid rough gravel, and finally a bed of fine sand about a foot in thickness. All these materials must be such as can neither furnish iron, alumina, lime, nor magnesia to the water. An excellent material to place above the gravel is the surface soil of moorlands, consisting of a mixture of peat and clean sharp silicious sand. This article is abundant and cheap in the manufacturing districts of Lancashire, Yorkshire, and Scotland, and is, to the best of my knowledge, the most efficacious substance available. The size of each filter must depend upon the quantity of water required, but it should never be allowed to stand deep over the filter-bed, otherwise the effect of the porous materials in transferring oxygen from the air to the impurities in the water will be lost. Therefore the water, as it flows from the subsidence-reservoir, must be allowed to enter at just such a speed that it may keep the whole surface evenly wet, and be drawn off below as fast as it filters through. Of course a filter, however well made, will in course of time cease to act, being choked up with the dirt deposited by the water in passing through. It is well, therefore, to provide a double series of filters, the one to be in action whilst the other is cleansed and relaid. The cleansing is generally effected by scraping off a few inches of the sand, and placing it where it may be exposed to the air, sun, and rain for some weeks before it is put back. Where suitable filtering material is near at hand, the filter-bed is better made up with new sand, etc. How often the filter requires renovating depends upon the quality of the water and the amount of work performed. The only rule that can be laid down is to attend to the matter as soon as a filter either passes its water too slowly, or without being sufficiently purified. Great care should be taken in the mode of leading the water into a filter. If allowed to enter with great force, and to impinge upon one particular spot, it may make one or two channels through the bed, and thus escape without filtration.

LIMING.—In many cases the addition of milk of lime will be beneficial to waters charged with either mineral or organic impurities. The bicarbonates are precipitated by this expedient, iron is got rid of, and a great many organic matters are deposited in the form of lakes. This operation, when required, is best performed in the stream above the subsidence-dam. The addition should be gradual and constant, so that all the water in the channel may be acted upon. Other additions have been recommended, and used in particular cases. Thus, to remove mineral matters and render water softer, beds have been constructed of spent madder and other dye-wares, and over these the water has been filtered. I think the peat or moor-earth recommended above will be found more convenient and efficacious. With certain waters acids may be required to neutralise an alkali, or alkalies to "kill" an acid. Such additions, where needed, are best made in the dye-pan or cistern.

PURIFICATION OF SPENT WATERS.—Sometimes the dyer or printer is required not alone to purify the water which he receives so as to render it fit for use, but to filter the waste liquors which he discharges, in order to escape litigation, on the score of nuisance. The increasing attention paid to the pollution of rivers will probably compel greater and more general care in this respect. Having had successful experience in dealing with the refuse of dye-works, I can say that, where a plot of falling ground can be had below any works, the water can be emitted in a state perfectly free from nuisance. If the refuse of a dye-works were allowed to flow continuously into a river as every vat or beck becomes spent, a great nuisance would be created. But if these various kinds of refuse are allowed to pass into a settling-dam large enough to hold two or three days' store, the case is entirely altered. The various wares, etc., present, react upon each other, and the impurities are thrown down in an insoluble form. The articles likely to be in excess are the spent or nearly spent dye-woods—logwood, peachwood, etc.—which are sure to arrest any iron, chrome, tin, copper, etc., emitted from the dye-works. The faint tinge of colour resulting from these woods is afterwards easily got rid of by passage through a filter-bed, with the addition of a little lime. This simple system was successfully carried out at Jackroyd Dyeworks, Wheatley, near Halifax, where litigation had arisen in consequence of the emission of refuse into the river Hebble. To meet the

difficulty, the spent liquors from the works were collected in a settling-dam divided into several compartments. When the first compartment was full, the foul water passed through wire-gauze at the surface into the second, and when this also was filled, into a third. In these dams the various ingredients had opportunity to react upon each other, to undergo the influence of the atmosphere, and to deposit their insoluble ingredients. From the last settling-dam the water was allowed to enter filter beds, and on issuing from them it reached a couple of dams near the river. In these it was clear, colourless, and devoid of smell and taste. Attested samples of the water were found by the soap-test softer than the spring supplying the works. When submitted to careful chemical examination the same water was found equal to the water of the Hebble above the dye-works, and superior to the water with which at another works in the district the most delicate cochineal, safflower, and aniline shades were being successfully dyed. Finally—a most important point—the firm occupying the works, in a dry season, conveyed the water back from the last dam and used it with satisfactory results.

Flax Growing in Ireland.

A few days ago a very large and representative meeting was held in the office of the North-East Agricultural Association, for the object of eliciting the opinions of the various parties interested in the successful growing of the crop in this country. The consensus of opinion amongst those present seemed to be that the matter lay practically in the farmers' own hands, for while farmers in general hold that it is a very difficult matter to make it pay as well as other crops, the majority of those present stated most emphatically that it was want of knowledge that made it so. Firstly, a good many farmers had no correct ideas as to the kind of soil it thrived in best, and, secondly, they very often purchased inferior seed—whether knowingly or otherwise was not stated—but we fear in many cases inferior sorts are palmed off as the best on those, who, from a want of a little more experience, do not know the difference. Next it was considered that far too little care was bestowed on the pulling and separating the fibre from the various kinds of weed unfortunately too often seen mixed with the flax when sent to the scutchers, and which, of course, acted adversely to the seller when brought into the markets, as it could not be expected that flax in this state would be as valuable or bring as high a price as that which was properly cleaned, steeped, and grassed, so as to have as little extraneous matter as possible mixed through it, and steeped and dried the proper length of time to make it strong and white. Mr. John S. Brown and other large linen manufacturers present gave the results of some experiments tried by themselves, which proved that if properly managed it can be made the best paying crop the farmer could sow at the present time, besides giving a much larger amount of employment to labourers than any other. Mr. Ewart (of Messrs. Wm. Ewart and Sons, Limited) in his remarks stated that there is £3 8s. 6d. more spent in labour on an acre of flax than on an acre of oats, and that flax production is of the nature of a manufacture, and all who wish our people kept at home must view with pleasure any effort to improve a farming industry which tends in that direction. Mr. Reade, of the York Street Spinning Company, gave the result of experiments he had made, which went to show that if the flax was dried and the seed taken off it before being steeped, it would tend considerably towards making it more remunerative to the grower; but most people who understand this question will be aware that farmers in general in this district cling tenaciously to the old-fashioned method of steeping it just as it is pulled, which, of course, completely destroys the seed. Whether this is done from ignorance of the matter, or for the purpose of avoiding more trouble with it, we cannot say, but we certainly trust that the results of the conference will be such as to give a fresh impetus to this important industry. Those of our readers who are connected with the flax trade of the present day will notice the great difference in prices got twenty years ago, when they generally averaged from 12s. to 16s. 6d. per stone; now the best flax will rarely bring more than 9s., and inferior sorts as low as 4s. 6d. and 5s., from which it will be seen that considerable difficulties stand in the way of the farmer; but if it can be grown successfully as a good-paying crop on the Continent, we see no reason why the same cannot be done in Ireland, where the natural advantages of climate are so much in its favour.

Trade Relations with Canada.

IMPORTANT TO ENGLISH MANUFACTURERS & MERCHANTS.



DURING the recent visit of Sir John Macdonald, the Premier of Canada, to England, an interview was obtained with him on the subject of the trade relations between this country and Canada, and the serious detriment to the development of these relations caused by the absence of a Bankruptcy law for Canada. As the result of that interview an important communication has been addressed to the Canadian Government, pointing out the difficulties which have been brought about by the repeal, some few years ago, of the Canadian Insolvency Act of 1875—difficulties which, if they continue to increase as they are doing at present, will materially restrict commercial intercourse with that Colony. Notwithstanding the complaints which were brought against that Act, it had at least one advantage, as under it all creditors had a certainty of being dealt with upon a fair and equitable basis. This is all the British merchants seek. They have never hesitated to incur the ordinary risks of trade, and do not seek to evade these responsibilities; but they do object to secret preferences being given by debtors to the disadvantage of creditors who live at a distance. The manner of dealing with insolvent estates varies in the different provinces of the Dominion. The practice in Quebec appears to be equitable, and no serious cause of complaint has arisen there. But in the Lower Provinces, and to a less extent in Ontario, creditors find themselves virtually at the mercy of dishonest debtors. It is within the power of a debtor in New Brunswick, who may find himself in difficulties, to execute a deed of assignment by which he appoints the distribution of the whole of his assets in any manner to suit his purposes; and there is reason for belief that the practice of taking advantage of this lax state of the law seems rapidly on the increase. Cases occur where a man has even assigned the whole of his assets to pay a preference claim of a father or a wife, although no proof was given that any money had actually been advanced. Creditors are told that such deeds of assignment can be upset if shown to be actually fraudulent; but it is hardly necessary to point out the extreme difficulty of proving fraud in these collusive cases; nor does it seem fair that creditors should have to prosecute the debtor in order to get an equitable distribution of assets. Sometimes creditors are told that they really gain by the fact that a debtor is now unable to get his discharge, except by the individual consent of each creditor, so that he always has the fear of the future hanging over him, unless he acts honestly. This may be, and probably often is, a real security to the Canadian creditor, who can pursue his debtor to any part of the Dominion and the United States, and can from time to time obtain from him payment of portions of the debt. The indebtedness hangs over the debtor like a millstone round his neck, and eventually the Canadian creditor no doubt gets much more than he would obtain if the debtor could take the benefit of a Bankruptcy Act. This safeguard is, however, of little practical benefit to creditors residing outside the Dominion, and experience has shown it to be purely illusory in such cases. Under such circumstances as these, a strong case can be made out in favour of some legislative interference by the Canadian Parliament for the protection of legitimate trade creditors against secret preferences. If facts were needed they could be easily supplied. An influential merchant in the City of London, who is taking some interest in this question, recently referred to four instances of insolvent estates in Canada, where the liabilities amounted to 300,000 dollars, and the nominal assets to 250,000 dollars, while the preferential claims came to 250,000 dollars also, thus leaving absolutely nothing for European creditors. Sir John Macdonald admitted that the evil was one requiring remedy, and this opinion is also shared by Sir Charles Tupper, the High Commissioner for Canada, in London. It is to be hoped, therefore, that some speedy relief will be offered, either in the shape of a Bankruptcy Act for Canada, or, if that is not feasible, some short Act to put a stop to fraudulent preferences.



ORIGINAL DESIGNS.

Tapestry fabrics are now being made in much larger designs than has, for some time, been usual. In consequence of this change in the requirements of manufacturers, we give a design on our first plate for this class of material. It is intended to be produced in a thirteen inch repeat. This pattern will be found well adapted for shuttling, so that a good effect may be produced. The design has been drawn by Mr. R. T. Lord, 97, Park Lane, Bradford.

We give a design for a Tapestry Fabric on our second plate, the character of which is also large. This has been drawn by Mr. R. T. Lord.

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The latest patterns of French and English Coatings, Vestings, Suitings, Fancy Cloths, Cassimeres, Tweeds, Mantle Cloths, &c. These Patterns give the latest Designs and Colourings for Cloths for the Spring and Summer Seasons in 1886.

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MONTHLY TRADE REPORTS.

Wool.—The Colonial wool trade has suffered somewhat in the late decline in prices, and very little has been selling during the past month, compared with former months. English wools, especially, have been difficult to sell, although they have, as a rule, been offered at rather lower rates. Business in the wool combing branch has fallen off considerably, and this fact has affected the markets to a great extent. In the woollen districts, the feeling has been of a better nature, and prices have kept moderately firm. In the yarn and piece branches, the demand has decreased, and, where orders have been given out, they have been at easier rates.

Cotton.—There have been no signs of improvement, but rather the reverse, in the cotton districts, both in the raw material and the manufactured articles. Raw cotton has kept fairly steady in price, but yarns and pieces have been offered at declining rates. The latter branch of trade is about as bad as it can possibly be, and, as a rule, unless lower rates are submitted to, goods have to be laid to stock. The prospect still seems gloomy, and the outlook for the immediate future is anything but cheering.

Woollen.—Business has varied considerably in different districts; while in some the mills are running full time with fair orders, others are laying to stock. The goods mostly inquired for have been the better classes of worsteds, in both plain and fancy styles. A steady trade has also been done in cheap tweeds of Yorkshire make. Medium goods have been rather quiet. In the Scotch districts, trade has been of a dragging nature, and there seems to have been an entire absence of new orders for goods. In the West of England, a moderate trade has been passing in the finest makes of cloths, but for the medium and lower qualities, only an indifferent demand has characterised the trade.

Linen.—There has been a fair activity in this branch during the month. In yarns, the improved demand has caused a rise in prices which has extended to cloths of most qualities. The jute trade has not improved in the slightest degree. More machinery has stopped owing to the want of orders, and wages have been reduced by many firms. Prices are very low, but this fact has not stimulated business.

Lace.—No new feature in business has been apparent in the lace districts. There has been a moderate demand for yarns of most kinds at firm rates, but, as a rule, the manufactured article has not met with any improved sale. The curtain branch is still in an unsatisfactory state, the production being larger than the consumption, still there are signs of an improvement.

Carpets.—This branch of trade is not encouraging; large quantities of goods have been put on the market, but at prices adverse to manufacturers. Tapestries have not met with a ready sale. Rugs and hand-made carpets have had a fair run, and Royal Axminsters have also been in increased demand. Some new designs have appeared, and, on the whole, have had success, but prices are not such as to satisfy producers.

Wastefulness in Mills.

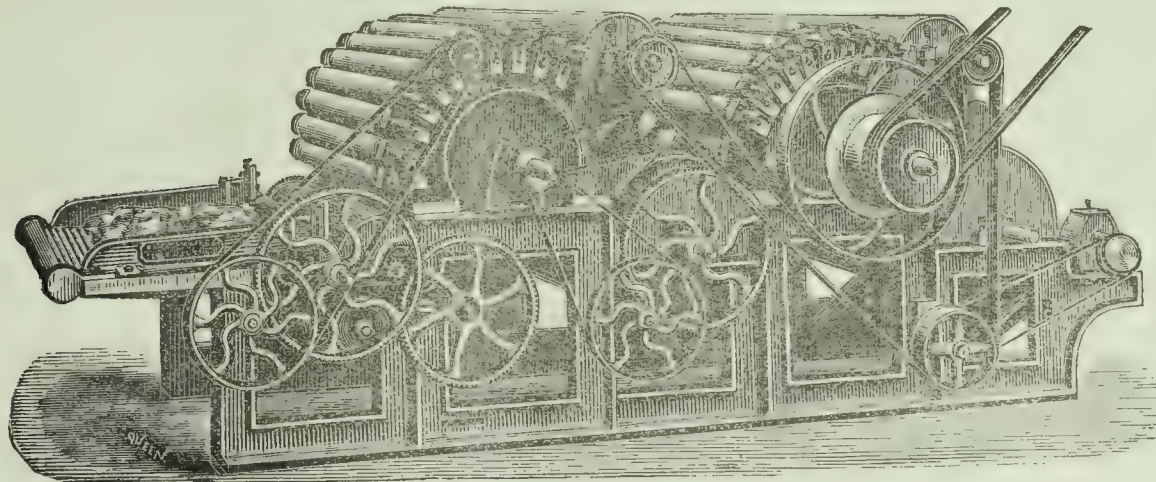
Some very sensible remarks, on "wastefulness in mills," a matter of the utmost importance to spinners and manufacturers generally, have been made by our valuable contemporary, "The Textile Record." It says while the disposition of a manufacturer to try to keep down expenses, during the hard times, is justifiable and necessary, it is worth while for him to remember that true economy does not always show itself in the purchase and use of cheap things. Under a wise system of mill management, the matter of quality will always be considered in preference to the matter of cost. Price is an important consideration, but far more important in the interests of true economy is it to ascertain if the thing purchased is the best possible thing procurable for doing the work that has to be done. A substance, or a machine, which will perform its functions imperfectly, is dear at any price. Gritty, watered, or inflammable oil will do more damage, in the long run, than the amount that will be saved by purchasing it in preference to good oil; inferior soap, for scouring, may be bought cheap, but it will prove in the end far more costly than good soap. Cheap shafting, and other machinery for transmission of power, will enable the buyer to avoid so large an outlay at the start; but he will, within a year or two, discover that he would have saved money by getting the best to begin with. And this principle will hold good all through the mill. The spinning, weaving, and other machinery which is bought at low rates, because the buyer thinks he can "make it do," will involve him in worry and loss, which he will regret not having avoided at any cost. Unskilled labour is always worth less than that which is skilled; but a manufacturer would consider it folly to have it suggested that he should fill his mill with green hands. An unfit machine, or a machine incapable of achieving the best results, is, however, a more hopeless thing to deal with than an untrained operative. The latter can and will learn, if he have time and opportunity; the machine never will do anything better than botch-work, no matter how great the skill of the operator. It will spoil good material, it will cause loss of time, it will vex the souls of master and man, and it will give a bad name to the products of the mill. This last is a sufficient condemnation of such machinery. A manufacturer ought to be as jealous of the reputation of his goods as he is of his own character and standing. The right way, the profitable way, of enforcing economy in the mill is to obtain the most perfect equipment of machinery that money can buy, to hire the best labour, and then to watch for and prevent waste of every kind. Wastefulness is the glaring fault of American mills, and particularly wastefulness in small things. The amount of loss from this cause, in some mills, would equal in each year a considerable profit on the investment. The process goes on in all departments and in all kinds of materials, and it becomes a habit upon the part of the workpeople, as indifference to it becomes a habit upon the part of employers and superintendents. The most rigid regulations, enforced under penalty, should be applied for the prevention of this kind of thing, and when they are applied saving and carefulness will become habitual as readily as wastefulness.

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Ces machines sont garanties de première qualité, sous le rapport du choix des matériaux et de la construction. Elles renferment plusieurs perfectionnements tout nouveaux.

Nous venons d'obtenir

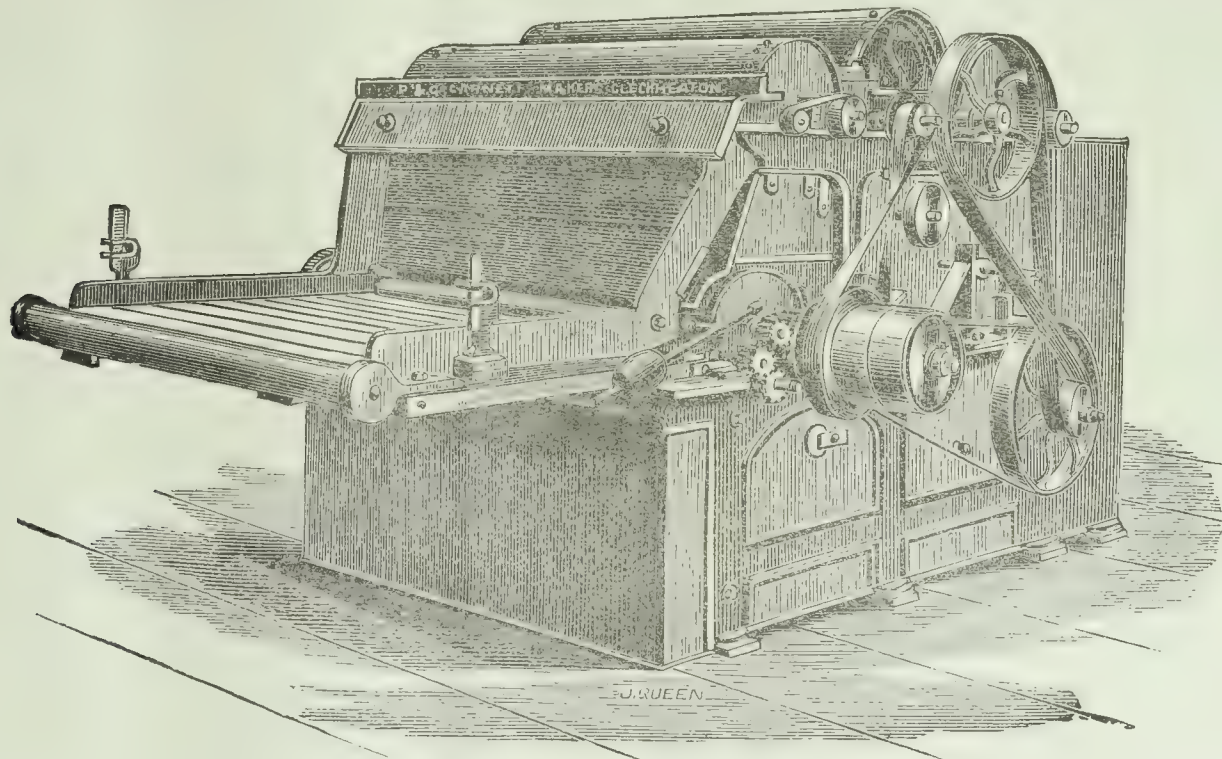
UN BREVET ANGLAIS

Pour un perfectionnement au moyen duquel nous pouvons placer 14, 16 et jusqu'à 24 rangs de dents au pouce sur les cylindres, tandis que jusqu'alors nous ne pouvions dépasser 12 rangs au pouce.

P. & C. GARNETT, SOLE PATENTEES,
CLECKHEATON, YORKSHIRE.

WHO ARE ALSO MAKERS OF
GARNETT'S PATENT COTTON GIN,
Unequalled for fast Seed Cotton.

NOUS CONSTRUISONS AUSSI
L'EGRENOIR BREVETÉ DE GARNETT
Sans rival pour la préparation des cotons à graine dure.



**IMPROVED WOOL CLEANING AND BURRING
MACHINE,**

Capable of cleaning 1,500 lbs. to 1,600 lbs. of Wool per day. The very best and most economical machine for this purpose which has yet been introduced to the public. Also

GARNETT'S PATENT METALLIC CARD,

For covering burr rollers and breasts of carding engines for woollen and worsted, and

TAKERS-IN OF COTTON CARDING ENGINES.

From Mr. ROBERT PLATT.

Stalybridge, May 9th, 1877.

In answer to your inquiry of the 7th, I have had your patent Metallic Cord in use more than twenty years, and am very much pleased with the working of it. Its advantages are that it is much cleaner and less costly than leather or any other covering.

**LA MACHINE PERFECTIONÉE À NETTOYER
ET ÉCHARDONNER LES LAINES,**

Pouvant nettoyer 1,500 à 1,600 livres de laine par jour. C'est la meilleure machine et la plus économique qui ait jamais été offerte pour cet emploi à l'industrie. Nous construisons aussi

**LES CARDES MÉTALLIQUES BREVETÉES
DE GARNETT,**

Pour garnir les alimenteurs, et poitrinières des cardes à laine et à laine peignée

LES BRISEURS DES CARDES À COTON.

Attestation de M. ROBERT PLATT.

Stalybridge, 9 Mai, 1877.

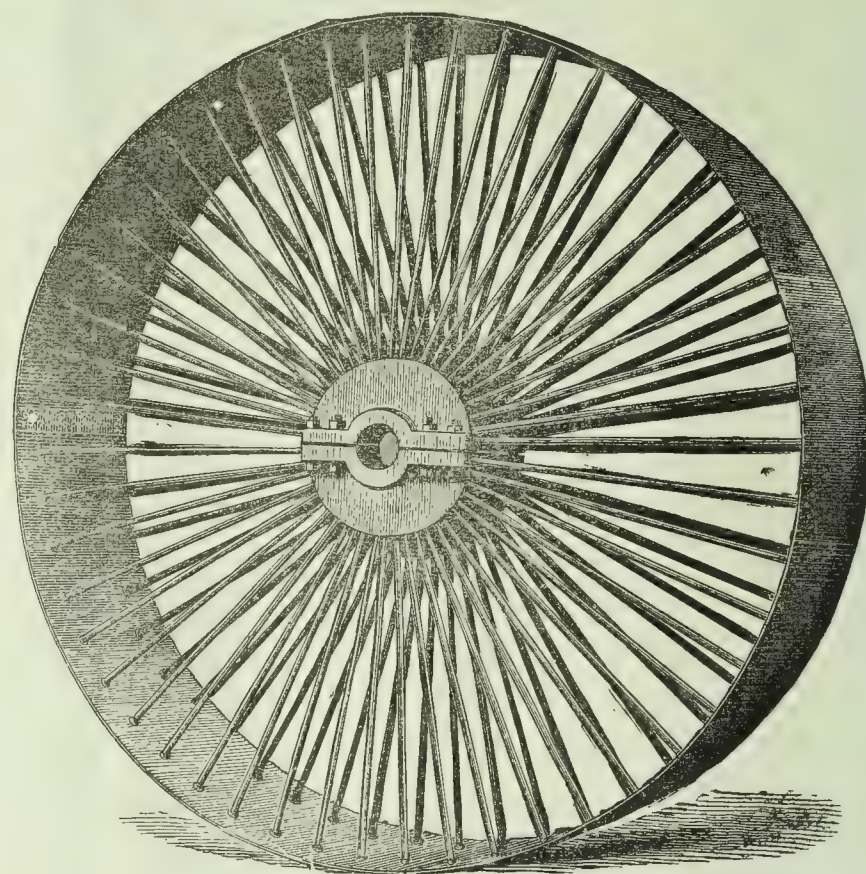
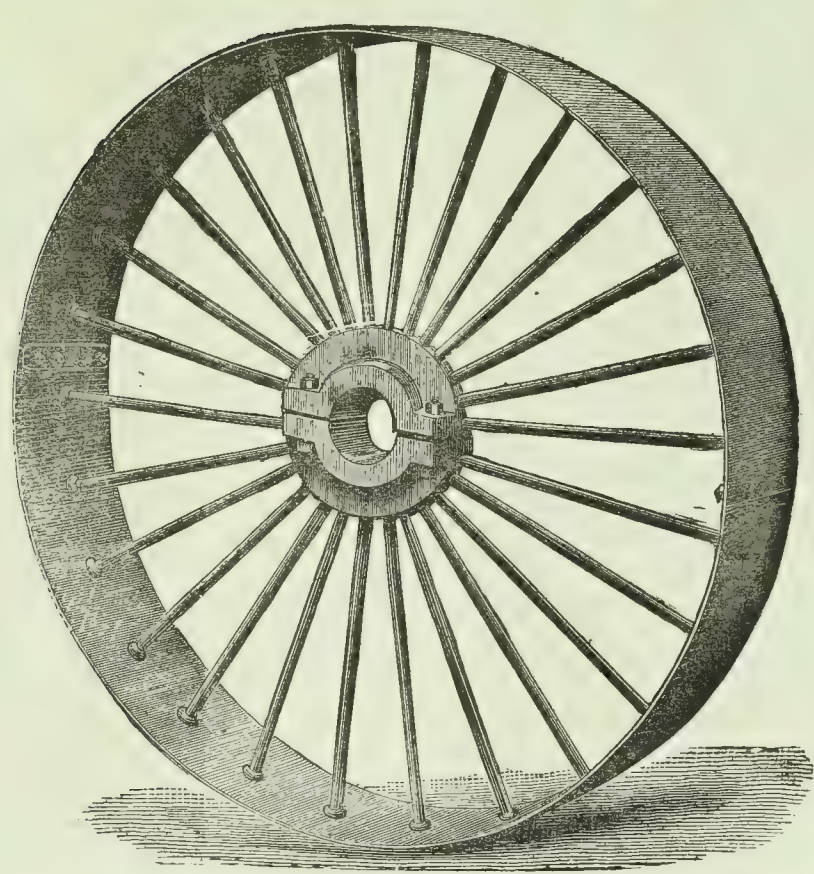
En réponse à votre lettre du 7 ct. j'emploie depuis plus de vingt ans votre système breveté de cardes métalliques et j'en suis très satisfait. Il possède l'avantage d'être beaucoup plus propre et moins cher que le cuir ou tout autre genre de garniture.

Agent—Mr. C. BORISSOW, Rue a Fiens, 3 ter. Lille, FRANCE.

RODGERS' PATENT WROUGHT IRON PULLEYS, SPLIT OR SOLID.

ALL SIZES FROM 6 INCHES UP TO 24 FEET DIAMETER.

Over 45,000 in use.



THE BEST PULLEY IN THE WORLD.

Wrought Iron THROUGHOUT, RIM, ARMS and BOSS.

THE ONLY WROUGHT IRON PULLEY MADE.

SOLE MAKERS—

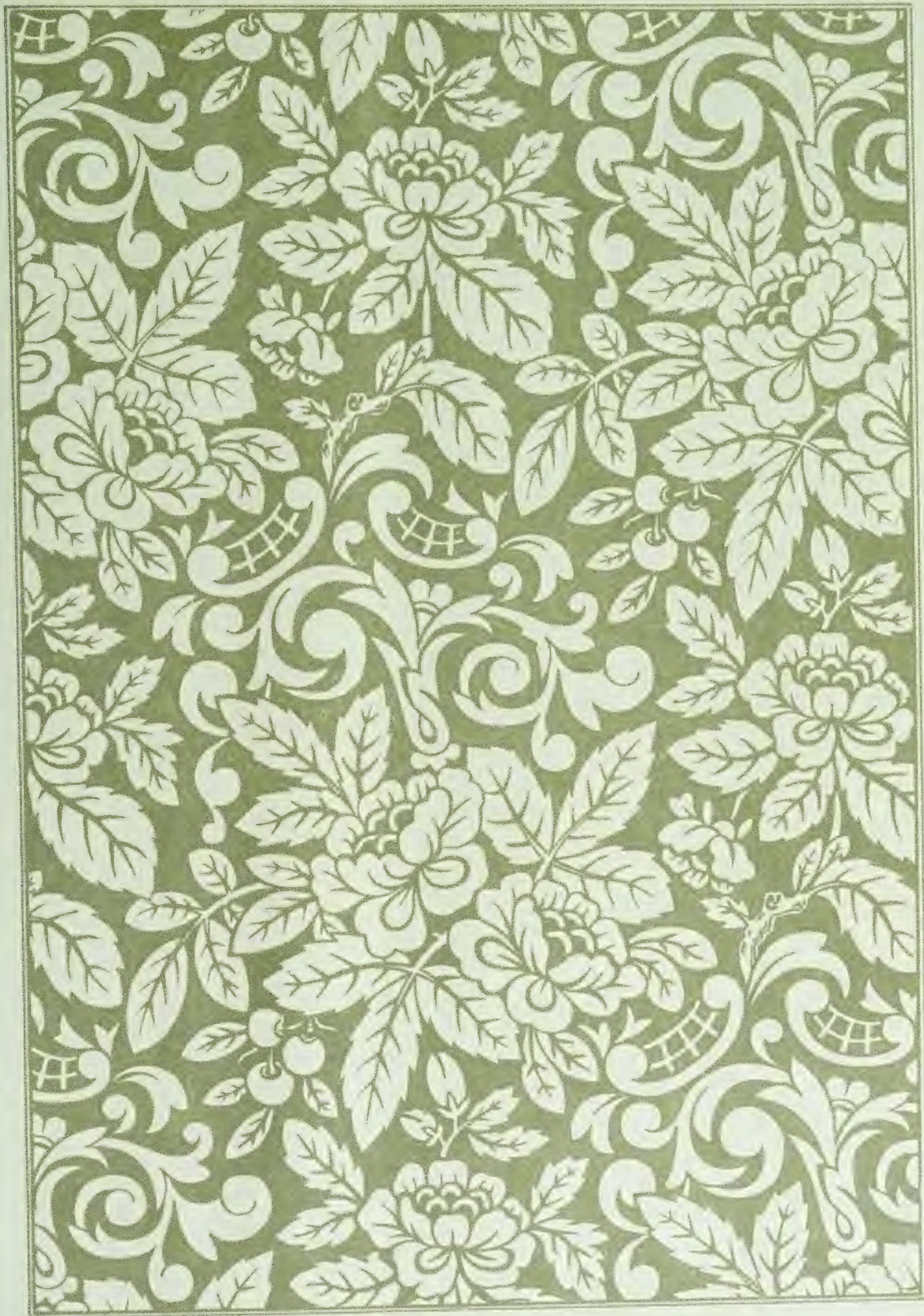
HUDSWELL, CLARKE & Co.

RAILWAY FOUNDRY,

LEEDS, ENGLAND.

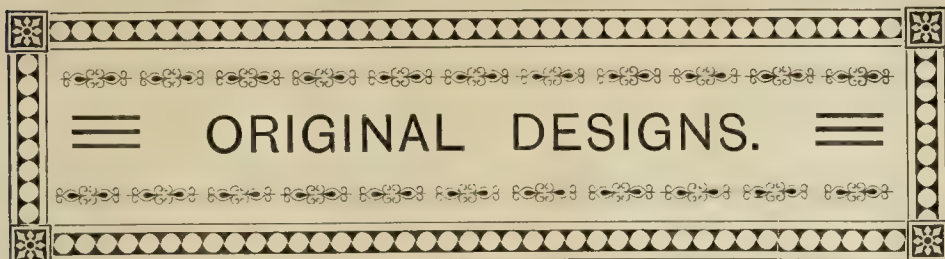


TAPESTRY.



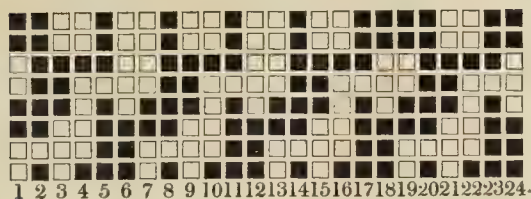
TAPESTRY





Suitings and Ulster Cloths.

No. 267.



Design.

Warp :

1 Fawn.
4 Slate.
1 Fawn.
6 Black.
1 Fawn.
4 Slate.
1 Fawn.
1 Black and Scarlet.
6 Black.
1 Black and Scarlet.

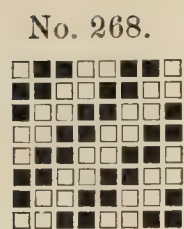
Weft :

As warp, omitting Black and Scarlet.

625 yds. per oz. doubled.
4,080 ends.
60 picks per inch.
68 inches wide in loom.
56 inches when finished.

26

Raise marks ■.



Design.

No. 268. Warp : 4 Drab.

4 Black.
4 Drab.
3 Black.
1 Light Blue.
4 Drab.
4 Black.
4 Drab.
2 Black.
2 Scarlet.

Weft : 4 Drab

4 Black
2 Scarlet

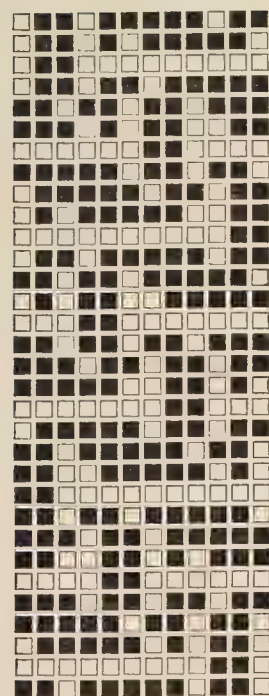
28.

Cheviot, 150 yds. per oz.
Warp 1,760 ends.
27 picks per inch.
64 inches wide in loom.
56 inches when finished.

32

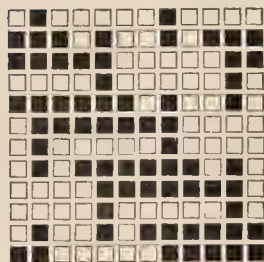
Worsted Coatings.

No. 269.



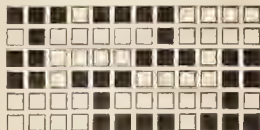
Design.

No. 270.



Design.

No. 271.



Design.

Warp : Face 2/48 Botany.
Back 20 skeins woollen.

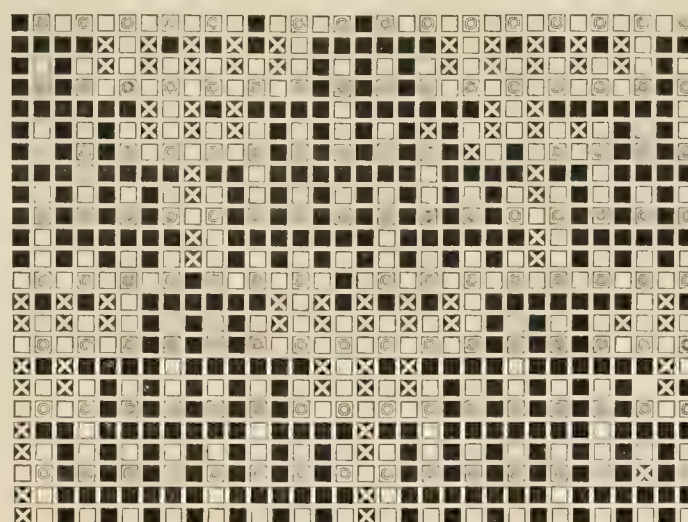
Weft : Face 2/48 Botany.
Back 11 skeins woollen.

75 picks per inch.
75 ends per inch.
12½ reed.
6 ends in each split.
64 inches wide in loom.
56 inches wide when finished.

Picked 3 and 1.

Figured Matelasse.

No. 272.



Design.

Face warp 2/40 mohair or lustre worsted.

Back „ 2/36 dyed black cotton (Egyptian).

Face pick 2/40 „ „ „

Fulling or wadding 4 skeins woollen.

Back pick 7 „ „

Straight over draft on 24 shafts.

Face warp 3,480 ends, or 60 ends per inch and 58 inches wide.

Back „ 1,740 „ 30 „ „ 58 „ „

30 ends per inch.

60 picks per inch.

3 ends in a split.

30's reed.

54 inches wide when finished.

The face gear should have 2 face threads in each mail, and these must be divided in the slay, so that 2 threads, 1 each from two different shafts, may be in one split, thus having a cotton end or backing warp between them, thereby dividing every face thread in the warp, which will produce a very even piece.

Drawn—2 ends of worsted or mohair on 1 shaft.

1 end of Black cotton on 1 shaft.

See plan.

Wefted—1 wadding.

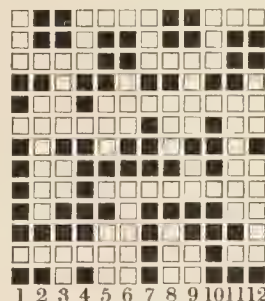
1 backing.

1 face.

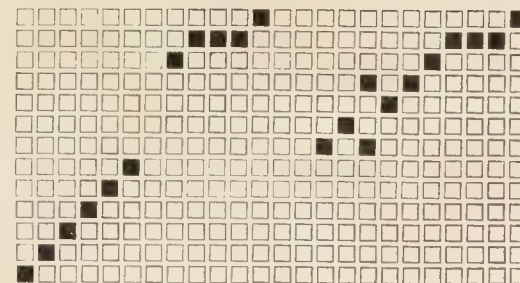
3 picks.

Worsted and Silk Trousering.

No. 273.



Design.



Draft.

Warp : 2,800 ends.

5 Angola Black.

1 Plum, 2/40's worsted.

1 Angola.

2 Orange, 2/60's silk.

1 Angola.

1 Plum.

5 Angola.

1 Peacock Green } 3.

1 Angola

1 Old Gold

1 Angola } 3.

Weft :

1 Black, 2/24's worsted.

2 „ 2/48's „

88 picks per inch.

33 inches wide in loom.

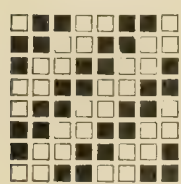
28 inches wide when finished.

Angola 375 yards per ounce.

Lavender silk for every alternate two.

New Costume Cloths.

No. 274.



The following 3 sets of warps are for No. 274, and when well worked out, make very effective costume cloths.

Weft as warp. Both warp and weft to be 2/84's worsted.

Warp No. 1.	Warp No. 2.	Warp No. 3.
12 White } 108.	1 White } 120.	1 Orange.
12 Black } 108.	1 Orange } 120.	4 Fawn.
6 Black } 102.	1 White } 120.	1 Orange.
6 White } 102.	1 Pale Lavender } 120.	3 Dark Blue.
		4 Fawn.
		4 Dark Blue.
		4 Fawn.
		3 Dark Blue.

4,440 ends.

70 picks per inch.

60 inches wide in loom.

54 inches wide when finished.

The Shawl Trade.

In a recent issue of a Continental paper, a most interesting article has appeared on the manufacture of shawls and cloth, which, to those who follow this branch of industry in this country, would be of practical benefit. In the shawl districts in England and Scotland, trade, for some time past, has not been of a satisfactory character, and various have been the reasons put forward to account for the quietness that has prevailed. There is no doubt that one of the primary causes has been the keen competition which has been developed on the Continent during recent years, coupled with the fact of heavy tariffs being imposed on British-made goods. In Germany, rapid strides have been made in the shawl manufacture, and it is from this quarter that we have felt the competition most keenly. In Berlin, Saxony, and Bavaria, the trade has developed enormously—both for home and foreign consumption, although the winters recently have been unfavourable to the home trade. The annual sales amount to fully 20,000,000 of marks, of which 12,000,000 are produced in Berlin alone, while some 8,000,000 are annually exported. But, although Berlin, Saxony, and Bavaria, in a manner, work against other countries, there is also a keen rivalry amongst themselves. Bavaria, formerly, produced little but the lowest qualities of shawls, and the competition with Berlin was then hardly perceptible, but now they manufacture high-class goods in abundance, the cheapness of labour in their mills enabling them to offer a formidable rivalry, which is only counteracted by the superior excellence of the designs put forward by the Berlin manufacturers. On the whole, the shawl trade in Germany is in a fair condition, although, for some classes, the demand is only of an indifferent character. Many of the foreign markets are overstocked with goods, both of English and German makes; and in others, notably, Peru, Chili, La Plata, &c., the demand is greatly restricted, owing to political and other causes. The demand for the Brazils and Mexico is very fair, and shows signs of improvement. For the United States, the outlook is likely to improve as the season advances. In Germany, the manufacturers are at present exceedingly busy with the production of jerseys, which have been largely ordered for home and abroad; Saxon fancy shawls, of which great quantities are required for Italy, South America, and Mexico; but, on the other hand, pure wool scarfs (bundas fajás) for Spain have been affected by the competition, and are not selling as well as formerly. Business in variegated shawls for the East, and in tamboured cloths for Spain, is also dull. The Saxon manufacturers of silk and half silk stuffs have, recently, been fully occupied. Numerous orders for cachenez and foulards, which were formerly derived exclusively from Lyons, have been received at Greiz. The first months of the year are usually dull in the cloth and shawl trades, but, on the whole, business is at present brisk, and manufacturers are fully engaged.

Gassing and Scouring Yarn.

Gassing and scouring yarn are operations requiring much care. The former process is used for heald and other yarns, to remove all the loose hairs, and make them perfectly smooth. The yarn is wound very quickly off the bobbin on to a swift, and in its transit passes through a gas flame, which slightly singes, but does not at all destroy, the main part of the yarn. After this process, it must be scoured or dyed. The gassing can, however, be done with advantage after the dyeing for dark colours. The method of scouring depends on the nature of the wool and the amount of twist in the yarn. For short wool, not hard twisted, it is best just to clip the yarn loosely in the warm suds, and then either to pass it through rollers or "whiz" it in a hydro-extractor. The softness of the twist prevents it from "jumping" and having a cockled, curly appearance. For yarns that are hard twisted in the single or two-fold, this simple method will not do. They have so great a tendency to curl and jump that means must be taken to keep them straight. Some persons prefer to scour the yarn on the swift just as it has been reeled, and for this purpose keep a large number of short swifts, so that as fast as one is filled with yarn it can be placed in the suds, rapidly revolved there, then taken out, and made to revolve again quickly, and finally placed in a hot room to dry, after which the yarn is taken off the swift. This plan has the merit of preventing the yarn from shrinking, and also of keeping it quite straight; but sometimes it is desired to let it shrink a little to give it a fuller or more pearly appearance, in which case another method must be employed. In this the yarn is first well stretched on a sort of rack, which can be screwed outward, so that the yarn is stretched to a slightly greater extent than it was before. Then it is taken off and scoured loose, in suds not too warm, and wrung out in the hydro-extractor. For hard yarns, this is better than press rollers, especially for crewel yarn, which should look full and pearly, for rollers flatten it too much, and also wring it unequally. From the hydro-extractor it is taken to the setting frame, an iron stretching apparatus, on which it is placed, and then screwed out as tight as possible, to stretch out all the curls. This is lowered into a vat of clean boiling water, and the yarn boiled for a short time to set it, after which it will never curl any more. It is then taken off, wrung, and placed on rods, hanging down, with another rod at the bottom of the hank to keep it straight, and it is taken to the hot drying-room, where it is left for perhaps twelve hours, till thoroughly dry. By thus being allowed to hang comparatively loose, the yarn can shrink without risk of curling, and thus a much fuller appearance is obtained than when it is scoured on swifts. If it is not well dried, the ends will mat together and be spoilt. If it be over-dried, it will come back by the natural moisture in the air to its normal condition. In England and the United States there is no standard of condition; but in France there are public and official testing establishments where the condition of tops and yarn is tested. It has been found that from the most absolute and perfect dryness which can be obtained without scorching the wool, it will regain 18½ per cent. of moisture, and that that is its proper and normal condition. Without efficient testing apparatus, it is not easy to be sure that absolute dryness has been obtained, but when the conditions are fulfilled, the test is a fair one.

Analysis of Animal and Vegetable Fibres.

Rough analyses of textile fibres may be made by burning, or by boiling in nitric acid. Animal fibres emit peculiar odour, burn with difficulty, and leave a spongy coal; vegetable fibres burn readily, without appreciable residue, and almost without smell. In nitric acid silk becomes bright yellow; wool deep yellow; cotton, hemp, and linen remain white. A better way is first carefully to wash the stuff, then rinse it thoroughly and dry it. The sample is then placed in a solution of caustic soda and boiled until the animal matter is dissolved. The residue is poured upon a filter, which retains the vegetable fibres; these are washed, to remove all traces of soda, dried and weighed. If the sample originally weighed 5 gr., and the residue weighs 1.5 gr., the animal fibre must have been 3.5 gr.; in other words, the proportion of wool in the material is 70 per cent.



MACHINERY, TOOLS, &c.

Atherton's Improved Buffers for Looms.

Two patents have recently been taken out by Mr. W. Atherton, Stansfield Road Leather Works, Todmorden, for improved buffers for looms. Manufacturers of all classes of textile goods often save considerably by the utilisation of new ideas in small matters; this, in the long run, amply repays them for the attention given to them. From the illustrations annexed, the advantage, in an economical sense, to be derived from the use of these buffers will be at once apparent, and as to their practical use, a trial will suffice to show their value in actual working.

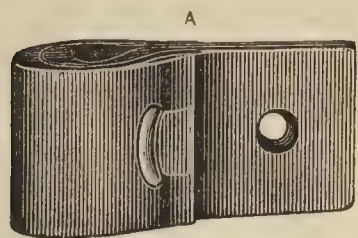


Fig. 1.

Fig. 1 represents a buffer for looms, to be fixed on the spindle of the shuttle boxes. Some ordinary buffers made of leather have four thicknesses of that material when doubled to put through the strap, it is, therefore, necessary that the strap should have a slit for the insertion of the buffer, of such a width that it has a tendency to weaken it, unless the strap be made wide enough to counteract this effect. In this patent buffer, only two thicknesses of leather are put through the strap, consequently the slit is of smaller dimensions. To effect this object, the outside portions—letter A—are either cut away or not put on during the making of it. The buffer also binds itself much tighter to the strap, owing to the latter being fixed close to the edges of the buffer at A, and therefore works more firmly. A less quantity of leather is used in the making of the buffer, and the strap may also be narrower than those ordinarily used, owing to the slit being smaller for the insertion of the buffer. A saving is therefore effected in material. Fig. 2 is an improved flat buffer or "picker saver." It has less material in its construction than those generally used, and is guaranteed to last considerably longer. The flat "picker savers" are, as a rule, made about four inches in length, and $1\frac{1}{4}$ inches in depth, and consist of three or four layers of leather. After the top layer is worn through by the action of the picker, the "saver" is discarded as being of no further use. It will be seen that the "saver" illustrated (Fig. 2) is made of a different shape from those now in use, and is about $2\frac{1}{4}$ inches in length, and $1\frac{1}{4}$ inches in depth. Six or seven layers of leather are fixed together as shown. After the first layer is worn through, the picker acts upon the second until it is also worn through. This process goes on until four or five of the layers have been acted upon, thus doing four or five times as much work as the ordinary buffer, and therefore in an economical point of view the buffer may be considered to be highly satisfactory. Both these patents have been in practical working, and have given ample proofs of their utility during the past six months.

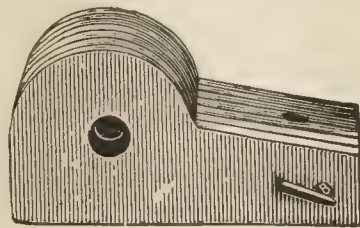


Fig. 2.

Machinery for the Treatment of Fibrous Plants.

Several trials of machines for decorticating the stems of the rhea and other fibrous plants have taken place in India at various times within the present century, in competition for a reward of £5,000 offered by the Indian Government. The prize, however, was never carried off, owing to the machines submitted for trial having failed to fulfil the conditions laid down. Another competitive trial took place last October, at Calcutta, and one of the competing machines has been awarded a prize of Rs.2,000. It is stated that the reason for the prize being so much smaller in amount than in the past, is that the conditions under which the recent trial took place were less stringent than formerly. The competition was ordered by the Government of Bengal, with a view to the introduction into India of a cheap, simple, and portable fibre-extracting machine. Nine machines were entered for trial, namely, one by M. Berthet, manufactured by MM. Talpin, Frère et Cie, of Rouen; two by Mr. Hatti Borooah, a native gentleman of Upper Assam; four varieties of Pownall's flax scraper, Cantwell's process; and H. C. Smith's machine, manufactured by Messrs. Death and Ellwood, of Leicester, and brought into notice by the General Fibre Company, of Fenchurch Street. To this last the committee have awarded the prize. The machine is described as a simple, compact, and well-designed machine. It consists of a cast-iron drum, perfectly balanced, on which eight gun-metal beaters are bolted. The drum revolves in front of a table or feed-plate fixed below the centre of the drum, so as to give a scraping action when the beaters pass it. The feed-plate is adjustable to and from the beaters by set screws, so that a fine or thick fibre can be cleaned. Immediately below the feed-table is a jet pipe, which throws a strong thin flat sheet of water against the whole width of the drum. These are the essential parts of the machine, and they are mounted on a cast-iron frame, which carries them as well as a trough to receive and let out water, refuse, and waste, and to prevent the water being thrown about. Two men feed the machine; each taking from three to five leaves or stems at a time, places the thick ends upon the feed-table and pushes them against the revolving drum provided with beaters. These smash the woody parts of stems, disengage the pulpy matters of leaves, loosen all

refuse matter, and by their action draw the crushed stems or leaves under the drum: here the sheet of water presses the stems or leaves against the beaters, a beating and scraping action continues, and the sheet of water acting as a cleanser as well as an elastic cushion or backing to the fibre while it is struck by the beaters, ensures a thorough cleaning. The stems or leaves are allowed to pass half way into the machine, and when withdrawn, all extractive matter has gone and clean fibre is obtained. This is held in the hand of the operators, who then pass and withdraw the thin ends in the same way. The result is clean, pure fibre, which is then hung up to dry, and when dry is ready to be baled at once. The cost of a single machine is £55, that of a double one, complete, is £100. A semi-portable engine to work two of the machines is supplied by the General Fibre Company of London, for £82 10s. On comparatively small plantations, instead of the steam engine, bullock gear can be used, which, for a single machine, is supplied at £30 by the company. The committee report that, although detailed statistical proofs are wanting, they have, by rough calculation, reason to believe that the machine can be worked with profit in this country, especially on jute, rhea, bon-dhenras or wild bhendi, agave, sansevieria, and pine apple. Rhea, it is stated, was cleaned better than any produced in any trial hitherto held in India. The other plants also yielded fibres which are said to have been far superior to any samples to be had there. The Lieutenant-Governor of Bengal announces that he accepts the finding of the Committee, and the following is taken from the Government resolution: "The mechanical working of this machine appears to have been rapid and effectual, and the further question whether it can be profitably introduced into Bengal may well be left to be decided by the commercial public, who have already shown considerable interest in the trials." The value of the fibres extracted, and the uses to which they can be put, are also matters to be dealt with by the experts and commercial men in the course of their ordinary business, and no further action on the part of the Government appears to be called for. Should it, however, be afterwards found that the facts ascertained in the recent trials are not complete enough to enable the mercantile public to form a fair judgment of the commercial prospects of the successful machine, further trials may be conducted under the superintendence of the Agricultural Department. In the meantime, in accordance with the recommendation of the committee, the Lieutenant-Governor has much pleasure in awarding a prize of Rs.2,000 to the General Fibre Company of London, for Messrs. Death and Ellwood's machine."

A Trade Mark Case.

In a trade-mark case which came before the Chancery Division a few days ago (*Re-Wragg's Trade Mark*), a question was raised respecting common marks and the effect of registration upon them. In the course of the case, Mr. Justice Pearson said he was asked to hold that when a trade mark was on the register for five years an indefeasible title to the use of the trade mark was conferred by the late Patent and Trade Marks Act on the registered owner, and for that proposition a supposed *dictum* was adduced of Sir George Jessel, the late Master of the Rolls; but when it was looked at there was no *dictum* at all to that effect, but merely an argument put by the Master of the Rolls into the mouth of some one else. If a different construction was put on the Act by a higher authority he should do what was his duty, but at the present moment he must read the Act as he thought it ought to be read for the protection of honest tradesmen in their business. On the evidence his Lordship held that the registered device or devices very similar to it, and that could not be distinguished for the purpose of registration, were in common use in the trade at the time of Mr. Wragg's registration. It was quite plain that no one could go with propriety and ask for registration of what was commonly used in the trade, and he must hold that no title was acquired by such registration. The register ought to be amended, because so long as this mark was on the register it would be in the power of the person in whose name it was registered, if he were unjust, by threatening legal proceedings to frighten other persons from the use of what they were entitled to use, and he ordered the device to be taken off the register, with costs.

Trade in France.

The "Jacquard," reporting on the Elbeuf woollen cloth trade at the end of February, says that some of the manufacturers who have been submitting their patterns to the Paris merchants have returned very well satisfied with the results. Others, on the other hand, have yet little grounds for hope that their machinery will be fully employed. There is still a moderately good demand for plain goods, but foreign, particularly German, competition is felt, and compels manufacturers to make sacrifices. At Fourmies, business is becoming worse and worse. Very little yarn is being sold, and "scarcely has a reduction of 10 centimes been accorded than a further reduction of 20 centimes is called for." The spinning mills are at present producing more than the manufacturers can consume, and it is being argued that the only remedy will be a general agreement to reduce production. The weather in Paris has not been favourable to business for nouveautes for ladies; considerable quantities of spring and summer goods are, however, being sent into the provinces and abroad. An improvement in the Spanish woollen industry is reported, but manufacturers do not expect that the season will now prove a good one.

Protection from Boiler Explosions.

It has been noticed that boiler explosions are especially frequent in the morning. Take, for example, an engine which works during the day with steam at 6 atmospheres. The workmen leave the factory at seven p.m.; about six o'clock the fireman reduces his fires and leaves the boiler with the guage at 4 atmospheres. On returning the next morning, at 5h. 30m., he generally finds the guage at 1.5 or 2 atmospheres, with a fine water level. He profits by the reserved heat, which represents a certain expenditure of fuel; as an economist he utilizes it and drives his fires, to be ready for the return of the workmen, without suspecting the dangers concealed in the water which has been boiling all night. He does not feed his boilers, because they are at a good level. In other words, he prepares, unconsciously, the conditions which are most favourable to superheating and a consequent sudden and terrible explosion, which will be attributed to some mysterious and unknown cause. Trèves recommends that, before starting the fires in the morning, the fireman should restore to the water the air which it needs, by injecting it, with the aid of pumps and suitable tubes, into the lower portions of the boiler. As soon as the guage of the pump indicates a pressure which is superior to that of the remaining steam, all danger is removed; the fires can then be driven, ebullition goes on normally, and explosions become materially impossible.

Washing Wool, Cotton and Linen Goods.

Water-glass for washing wool, cotton and linen. Franz Gundmann at Schwerdnitz, has made a number of tests with water-glass, the result he gives as follows: Linen goods lose less weight when washed with water-glass than with soap lye; cotton goods lose more, and for woollens it is not advisable to use water-glass. Water-glass requires less labour than soap. The East is considerably in favour of water-glass. The degreasing with water-glass in boiling is more complete and almost instantaneous; a longer boiling in lye is not necessary. Cotton goods may be washed with water-glass and soap when the temperature is kept below the boiling point. Woollen goods are better washed in soap. If the loss on weight be of less account to the complete degreasing, water-glass and soap may be used as the boiling point. Goods to be bleached can be advantageously washed with water-glass. This must be dissolved in 100 parts water to one part. Wool and yarns should not be washed with water-glass.—*Deutsch Farberzeitung.*

Société Industrielle de Mulhouse.

PRIZE COMPETITION.

This Association has resolved to give prizes for chemical objects, of which the following are of special interest to the textile industry:—

- I. Silver medal for a theory on the manufacturing of turkey-red oil.
- IV. Honorary medal and 1,000 francs for a substance to replace egg albumen in the industry of printed linens, and which is cheaper than albumen.
- VI. Honorary medal for a material improvement in bleaching of silk and wool.
- IX. Silver medal for an ink for marking cotton goods which are to be dyed in dark solid colours. The ink must be visible after having passed all the necessary operations.
- XI. Silver medal for a blue for bluing wool, and which resists light and steam.
- XIII. Honorary medal for a green, fast against light and soap, and that can be fixed without albumen; it must be more brilliant than *cöruleine*.
- XXI. Honorary medal for a metal allegation or a substance for shade-rollers, of the elasticity and durability of steel, but not alleging with metallic salts.
- XXX. Silver medal for an automatic apparatus indicating the temperature and the moisture in the air of the drying-rooms of prints.
- XL. Silver medal for a dye-stuff to replace logwood, which is preferable to it as to solidity.
- XLII. Silver medal for roller-printing with metallic powders which give the appearance of gold and silver with or without cylindering. They must resist the operations of cleaning steam colours which are printed simultaneously with such powders.

The prizes will be awarded at a meeting to be held in May next.

Dyeing with Benzine.

For dyeing wool, cotton and silk in one bath. This method is for the purpose of dyeing combination costumes without damaging them or injuring their appearance. Neutral dyeing aniline is dissolved in strong Marseilles soap, some acetic acid added, and then dyed. A thick dyeing mass is thus obtained which dissolves in benzine, and serves to dye goods cold. For red, saffranine is the most advantageous; saffranine and bismarck for bordeaux; methyle blue for light and medium blue; marine blue aniline for navy blue; cotton green for green; green and auramine for olive bismarck; bismarck and violet for brown, &c.

The Berlin Linen Trade.

A Berlin correspondent calls attention to the recent development of exports of linen goods, in which trade some fifty leading houses in Berlin alone are engaged; a considerable trade has always been done in this branch, even with England, a large quantity of so-called English collars being manufactured in Germany, whilst they receive their trade marks in England. Latterly, an expansion of this trade has led to a brisk export of shirts, &c., to America, the sales in this direction having only reached 24,141 dols. in 1883, and 78,865 dols. in 1884. The chief market, however, is found at home, whilst Austria, Russia, Italy, Spain, France, South America, Holland, Belgium, Denmark, and Sweden, all derive the greatest portion of their requirements from Berlin, and the competition against English goods could be still further developed but for the German import duties on products required in this industry. Twenty years ago only some three or four Berlin houses were engaged in this trade, which now employs over 16,000 hands, and whose annual production is estimated to be worth 16,000,000 marks.

Cotton Mills in Brazil.

Below we give a list of the cotton mills in Santos, Brazil, together with their location, capital, machinery, &c.:—

	CAPITAL.	LOOMS.	PRODUCT.
Carioba	200,000	40	Coarse and plain twilled cloth.
Barros	300,000	60	" " " " "
Tatuay	400,000	80	" " " " "
Juniahy	200,000	40	Coarse plain cloth.
Sorocaba	250,000	50	" " " and sheetings.
Salto de Itu ..	250,000	60	" " " " "
Itu	150,000	20	" " " " "
Piracicaba ..	300,000	80	" " " " "
Uberaba	300,000	60	" " " " "
Santo Antonio, do Machado ..	200,000	40	" " " " "

According to the recent report from Santos, capital is now being raised for putting up, in addition to the above, one of the largest cotton mills in Brazil, to be located at the city of Sao Paulo, capital of the province of Santos.

Injurious Modes of Lubrication.

Schoudorf recounts the examination of the large cylinder in a Woolf engine, employed in the mines of Sarrebruck. On opening the cylinder there was found upon the piston a brown, wax-like mass, weighing more than 150 kilogrammes (330.7 lbs). It contained 60 per cent. oxide of iron, 26.77 per cent. of organic matters soluble in alcohol, 5.7 per cent. of insoluble organic matter, the residue being composed of water with a little silicic acid. The cylinder had been in use for about a year, during which time 192 kilogrammes of suet had been employed for lubrication. The decomposition of the suet by steam into glycerine and fatty acids, led to the formation of a soap of protoxide of iron. The oxidation of the iron, which is limited chiefly to the interior surface of the cylinder, gradually produces an enlargement of the diameter. The evil may be obviated by using, as a lubricant, mineral oil of good quality, which boils only at a very high temperature.

ODDS AND ENDS.

The outlook for a substantial improvement in the cotton industry in Canada, is thought to be hopeful. At meetings held recently by the representatives of mills from all parts of the Dominion, arrangements were entered into to pursue a certain line of policy in the interests of all, which commended itself strongly to those present. Means are now being taken to get the management of every mill in Canada to come into the arrangement, and no dissent is anticipated.

A curious illustration of the "sweet uses of adversity" is furnished by the rabbit skin industry of New Zealand. The spirit of enterprise is fast converting the destructive rabbit pest into a source of income. In 1882, the large number of 9,198,837 rabbit skins were exported, of the value of £88,725. Germany and the United States compete for them, the former having discovered the means of converting the rabbit fur into a capital imitation of fine sable, and the latter using them in the manufacture of furs.

South Australian newspapers report, with congratulatory comments, the first annual meeting of the South Australian Woollen Company, which has turned out during the second half-year of its existence, 25,592 yards of cloth, and delivered 25,643 yards. Considering that, as it is stated, the company has not only had to educate its workmen into skill, but the buyers in business houses out of a prejudice in favour of imported stuffs, it must be admitted that this is a very fair beginning, and gives promise of better things, "which it is hoped" will not be jealously regarded by those of the "old country."

A gentleman, writing to the Editor of *The Yorkshire Post*, says:—"Some time ago I wrote you pointing out that high chimneys were not only dangerous but unnecessary. I have since ascertained that they waste the heat by drawing it away from the boilers, or furnaces, too rapidly. In the application of gaseous fuel to some boilers in Lancashire, it was found that by partially blocking the chimney a much greater heat was obtained from the same amount of gas. There can be no question that gaseous fuel must be the fuel of the future. It obviates the necessity for high chimneys, abolishes the smoke nuisance, gives greater heat than coal, lengthens the life of boilers, and will reduce the coal bill at least one-fourth."

The *Times* says that in consequence of the serious strikes at the Morozoff and other mills near Moscow, which have now come to an end, the Governor-General of Moscow, Prince Dolgorouki, has issued a code of special regulations for controlling the relations between employers and their workpeople in the Moscow district. This the Prince has done under the independent authority allowed him by the minor state of siege still in force in the Moscow province. These regulations bind the employers of labour to the chief police-officer of their district in such a way as to give the latter the right, or rather to impose upon him the obligation, of concerning himself with the minutest details of the daily relations between masters and men, and the affairs generally of the business, even to the profit and loss account of the concern. A special Commission is also spoken of in St. Petersburg for considering the whole subject, and elaborating a new project of law to remedy the existing evils.

A very useful discovery was recently made in California of a process for removing scale from steam boilers, and, like many other discoveries, was the result of accident. Mr. George Downie, the proprietor of a flour mill at Salinas City, was in the habit of filtering water in an old heater, in order to free it, as far as possible, from the impurities that formed the scale in his boiler. After running the water through the heater he let it drain through straw. One day, being out of straw, he gathered together the leaves of a eucalyptus tree that stood near the mill, and used them instead. He was surprised on finding soon after that not only had the formation of scale been stopped, but that the scale already in the boiler had been removed. He continued experiments, and imparted his discovery to others, who subsequently introduced the extract, a dark brown liquid, made from the leaves of the tree, from San Francisco to New York, where it is now meeting with great success in removing old scale from boilers and preventing the formation of new.

We learn that a German lady is at present engaged in a series of interesting experiments on the common nettle, and it is said that she has induced several landowners in the country to plant good wheat land extensively with the nettle, in the hope that, by cultivation, the fibre will be so much improved as to become valuable to the textile world. This fibre as a marketable article is not new in Germany; many years ago the stinging nettle, *urtica utilis*, was very largely used as a material for making woven fabrics, and the name of "nesseltuch" or nettle-cloth is still given to muslin in that country. In the Centennial Exhibition at Philadelphia in 1876, there were some very fine specimens of nettle fabrics contributed by the representative of German manufactures. Still, the Chinese rehea or ramie seems to have been, and still is, of much more importance than any other kind, and now that there is a chance of the problem of separating the fibre by machinery being solved satisfactorily, we hope the day is not distant when the various members of this numerous family will receive the attention they apparently deserve.

THE GAZETTE.

Adjudications of Bankruptcy.

Buncombe, W., 4, Paternoster Square, London, skirt manufacturer.
Beardsell, B., George's Square, Huddersfield, woollen cloth manufacturer.
Rawle, W. H., Alfred Street Mills, Ashforth Street, Nottingham, lace manufacturer.

Dividends.

Heap, R. R., Market Street, Huddersfield, Yorkshire, woollen manufacturer, 3s. 4½d., Messrs. Armitage, Clough and Co., accountants, 23, John William Street, Huddersfield.
Scarborough, John, G. Scarborough, T. S. Scarborough, and Joseph Scarborough, Trafalgar Mills, Halifax, Yorkshire, worsted spinners and manufacturers, 3s., Messrs. Armitage, Clough and Co., accountants, 23, John William Street, Huddersfield.

Bills of Sale.

	£	s.	d.
Plummer, A., Upper Princess Street, Luton, bleacher and dyer	300	0	0 ab.s
Plant, B., West Hill, Heanor, framework knitter	50	0	0
Powell, J., 7, Dunollie Road, Kentish Town, stuff agent	60	0	0
Pratt, W. T., 139, Stepney Green, Mile End, wool salesman	45	0	0
Pearce, G. C., Brewery Mill, Birkby, Huddersfield, wool extractor	250	0	0
Reynolds, E. W., Wreathhill Terrace, Levenshulme, shirt manufacturer	40	0	0
Tordoff, A., 2, Edward Street, Morecambe, wholesale stuff dealer	150	0	0
Turner, P. P., Pyrland Road, Highbury, carpet warehousemen's agent	1,150	0	0 ab.s
Whitaker, G. (and another), Brooklands, Rochdale, cotton spinner			settlement.

Dissolutions of Partnership.

Bashforth, C., and W. Bashforth, Bottoms Mill, Holmsfirth, cloth manufacturers.
Eastwood, F., and B. Eastwood, John William Street, Huddersfield, woollen cloth manufacturers.
Flersheim, H. E., and J. J. M. Feilmann, Nottingham, lace merchants.
Hart, M. P., and S. L. Harris, 11, Redcross Street, London, wholesale clothiers.
Heath, G. H., and E. Hilton, 26, Fountain Street, Manchester, silk merchants.
Jenkins, J., and H. Pugh, 40, Bartholomew Close, London, shirt manufacturers.
Lee, J., and W. Jagger, Waterloo Mills, Leeds Road, Huddersfield, Yorkshire, cloth fullers and finishers.
Lister, A. H., and J. Smith, Cannon Street, London, wholesale warehousemen.
Marsden, B., J. T. Marsden, and H. C. Scott, South Ossett, Yorkshire, rag and mungo merchants.
Mallison, J., and J. Riley, Manchester, cotton manufacturers.
Newton, G. J., and J. Newton, Butler's Factory, Russell Street, Nottingham, lace manufacturers.
Newman, H. W., A. B. Smith, and W. J. Newman, 45, Newgate Street, London, warehousemen.
Pearson, J. G., B. S. Gower, and R. Bostock, Phoenix Clothing Mill, Market Drayton, Shropshire.
Riley, J. E., and D. J. Watmough, Oldham, Lancashire, sewing cotton manufacturers.
Sudlow, E., and E. W. Chambers, Great Winchester Street, London, silk brokers.
Shargool, F. E., and H. C. Goss, 2, Lawrence Lane, London, manufacturer's agents.
Sutcliffe, W., H. Ripley, and H. Sutcliffe, Bowling, Bradford, Yorkshire, dyers.

PATENTS.

Applications for Letters Patent.

Automatically stopping gill, slubbing, and other drawing boxes. H. Illingworth and J. Tarbotton, London	3rd Feb. 1,480
Azo colours on textile fibre. T. Holliday, London	25th Feb. 2,580
Buffer for looms. W. Atherton, Bradford	30th Jan. 1,324
Blankets and horse-clothing, on a woven hemp or jute foundation. G. L. Stocker, London	18th Feb. 2,245
Belt stretcher. A. Hill, Manchester	26th Feb. 2,608
Cork thread used in the manufacture of buoyant fabrics. J. E. Thurman, Manchester	30th Jan. 1,319
Cutting pile fabrics. T. Millward, London	30th Jan. 1,351

Combination of materials to be used in the manufacture of damasks. W. Brown, Halifax	31st Jan. 1,370
Creels of preparing, spinning, winding, and doubling machines. J. H. Wilson and J. Greenwood, Manchester	31st Jan. 1,371
Combing wool, &c., J. W. Bradley, London	31st Jan. 1,409
Cutting pile fabrics. S. C. Lister and J. Reixach, Bradford	5th Feb. 1,625
Cutting holes, perforations, patterns, &c., in textiles, &c. A. Hentschel, London. A communication	6th Feb. 1,671
Cutting velvet and other piled fabrics, and apparatus therefor. H. Thomas, Liverpool	10th Feb. 1,810
Cross-finishing woven pile fabrics. T. Cotton, Halifax	12th Feb. 1,929
Carriage employed in twist-lace machines. R. B. Gamble, London	12th Feb. 1,941
Cap-spinning machinery. E. J. Oates, Halifax	23rd Feb. 2,416
Driving the spindles of spinning and doubling machines. J. Elce, Manchester	20th Feb. 2,308
Dobby or shaft machine for weaving fancy textile fabrics. J. Southworth, R. Raby, and J. R. Smith, Preston	23rd Feb. 2,415
Drying textile fabrics, &c. J. C. Mewburn, London	25th Feb. 2,556
Embroidering textile fabrics in continuous lengths. S. Wachter, London	6th Feb. 1,649
Elastic fabrics. L. Turner, London	12th Feb. 1,960
Electric stop-motion for stockenette and knitting machines. R. H. Lendrum, Halifax	16th Feb. 2,106
Embossed ornamental fabrics. J. Robertson and J. Robertson, junior, Glasgow	25th Feb. 2,545
Flat picker-saver. W. Atherton, Bradford	30th Jan. 1,323
Finishing and imparting lustre to velvets and other cut-pile fabrics. A. Ridge, Manchester	30th Jan. 1,325
Foot-steps of mule twiner and other spindles. G. Pickford and E. Jagger, London	9th Feb. 1,752
Fastening shuttle tips, and machinery therefor. J. Sellers, Manchester	13th Feb. 1,996
Fast and loose reed looms. J. Marshall, London	14th Feb. 2,075
Fancy yarns, and apparatus therefor. G. A. J. Schott, Bradford	23rd Feb. 2,427
Gills or fallers for preparing wool, &c. T. H. Wharton, Bradford	10th Feb. 1,790
Hair and fibre carding machines. C. Gauntlett, London	18th Feb. 2,246
Increasing the width of woven fabrics. J. Dykes, Bury	23rd Feb. 2,421
Lubricating the bearings of spindles, and attaching flyers thereto. J. Marsh, Manchester	5th Feb. 1,575
Lace in twist-lace machines. R. Toone and T. Cooper, London	7th Feb. 1,727
Lace in twist-lace machines. W. Lawrence and I. Elliott, London	18th Feb. 2,256
Lubricators. E. Rost, London	21st Feb. 2,369
Lubricators. W. J. L. Stewart, London	21st Feb. 2,370
Lubricators. A. J. Boulton, London	21st Feb. 2,397
Machines for warping in sections. P. J. Livsey, London	11th Feb. 1,877
Making spindles. A. Kershaw, Belfast	13th Feb. 2,038
Machinery for spooling thread on bobbins or reels. S. Bash, Manchester	14th Feb. 2,050
Machinery for ironing, smoothing, glossing, pressing, or finishing fabrics. M. Heslop, London	18th Feb. 2,248
Ornamenting textile and other fabrics, and materials and apparatus therefor. J. Whitley, Leeds	6th Feb. 1,687
Ornamental and other designs on Astrachans and similar fabrics. W. Ireland and J. E. Thurman, Manchester	18th Feb. 2,217
Producing frillings or millinery trimmings. A. W. Hancock and J. Leighton, London	31st Jan. 1,364
Printing or impressing designs on the materials used in making hats or bonnets. J. T. Hoare, London	2nd Feb. 1,428
Printing and embossing textiles. J. Birtwistle and E. Ogden, Manchester	9th Feb. 1,750
Producing designs on reversible fabrics. W. B. Robertson and W. Walker, London	17th Feb. 2,140
Printing and embossing. A. and J. and R. Hay, Manchester	20th Feb., 2,307
Pressing, stamping, embossing, or finishing plush, velvet, &c. C. Coget, London	24th Feb. 2,498
Rotary wool-combing machines. J. H. Whitehead, London. A communication	31st Jan. 1,407
Rendering vegetable fibres, fabrics, &c., impermeable to air and liquids, and imparting to them the properties of resisting acids and alkalis. T. J. Pearce and M. W. Beardsley, London	6th Feb. 1,604
Spinning and doubling machines. G. Bernhardt, Manchester	3rd Feb. 1,458
Spreading and drawing hemp, flax, &c. A. V. Newton, London	3rd Feb. 1,497
Shearing or cutting pile fabrics. T. Salt, London	9th Feb. 1,760
Shedding motions for looms. J. Peel, Manchester	10th Feb. 1,791
Shuttles for looms, and apparatus to prevent them flying out. J. Holding, London	11th Feb. 1,894
Steaming in bleaching fibres, &c. W. Mathers, London	11th Feb. 1,911
Scouring and washing wool, &c. J. and W. McNaught, London	13th Feb. 1,885

Spinning, drawing, and twisting fibres. N. Greenwood, J. Butterworth, and D. Gledhill, Halifax	16th Feb. 2,114
Seating cloth for upholstery purposes composed of polished yarns. G. P. Lee, Manchester	20th Feb. 2,314
Self-stopping, warping or beaming machines specially adapted for falling rods. P. Brimelow, Bury	20th Feb. 2,322
Studs or spindles for roving, spinning or twisting machinery. E. J. Oates, Halifax	23rd Feb. 2,417
Securing bobbins or spools in shuttles. J. W. Gledhill, and C. Roberts, Halifax	26th Feb. 2,599
Shearing or removing waste threads or filaments from woven fabrics. W. P. Thompson, Liverpool	26th Feb. 2,603
Tentering machines. H. Ivison, Halifax	3rd Feb. 1,464
Tubes for cap-spinning and twisting, &c. H. Illingworth, J. Binns, and J. Kelley, London	3rd Feb. 1,479
Twisting machines. P. Smith and S. Ambler, London	11th Feb. 1,910
Temples for looms. W. and H. E. Lupton and J. C. Lupton, London	21st Feb. 2,382
Taking-up motions for looms. R. Ingham and H. Livesey, Halifax	26th Feb. 2,602
Uniting ends of driving belts. S. Rowbottom, London	6th Feb. 1,666
Ventilating and smoke consuming. J. W. Holden, Withington	3rd Feb. 1,460
Velveteens. G. A. Shiers, A. Wright, and E. Hadfield, Manchester	23rd Feb. 2,428
Wharles and wharle-tubes for roving, spinning, and twisting machinery, where the bobbins are positively driven. J. C. Rouse, Halifax	2nd Feb. 1,420
Washing, cleansing, and scouring wools, &c. J. and F. W. Petril, Rochdale	4th Feb. 1,519
Weaving pile double, treble, or more fold. J. Schofield and G. Jackson, London	5th Feb. 1,591
White oil or grease from black oil or brown grease. M. Ayrton, Halifax	21st Feb. 2,381
Warp-lace curtain machines. E. V. Smith, London	24th Feb. 2,467
Woven and felted fabrics, &c., made waterproof. S. H. Sharp, Halifax	24th Feb. 2,534
Yarn or thread. S. Hollins, London	7th Feb. 1,743

Patents on which the Fourth Year's Renewal Fee of £10 has been paid.

Combs, porcupines, gills and card covering, and apparatus therefor. T. R. Harding, Leeds	10th Feb., 1881.	592
Looms. J. Hollingworth, Dobcross	7th Feb., 1881.	522
Sizing machines. E. and S. Tweedale, Accrington	16th Feb., 1881.	660

Patents Sealed.

2,093	2,423	2,621	3,064	3,101	4,904	11,753
14,086	1,702	2,231	2,519	2,637	3,338	3,360
3,402	3,411	3,590	3,849	12,678	2,191	2,546
3,445	3,556	3,678	13,928	2,713	3,083	3,615
3,747	3,816	3,907	5,838	6,747	14,544	1,422
1,691	1,784	2,425	2,775	3,280	3,790	4,006
4,562	4,566	5,060	5,231	5,470	10,941	13,131
14,462	2,424	3,803	4,241	4,248	2,134	2,706
2,993	4,180	4,676	6,303	14,994	919	1,145
3,379	3,784	4,417	4,480	6,973	6,974	15,171

Complete Specifications Accepted.

4,628	4,758	4,954	5,112	6,095	6,148	6,150
6,501	6,797	7,150	3,696	5,512	6,451	6,625
6,783	6,788	7,787	14,213	5,532	5,659	6,399
6,473	6,674	6,748	3,226	6,135	6,449	6,522
6,837	7,018	7,889	11,528	14,824	471	488
3,752	3,762	6,175	6,495	6,892	6,917	7,124
7,251	7,780	9,676	15,649	821	6,847	6,848
7,039	7,179	86	6,287	6,349	7,297	7,450
7,679	14,870	895	918			

Provisional Specifications Accepted.

15,682	15,742	16,010	16,084	17,064	54	86
196	197	273	483	594	16,472	59
193	337	378	647	666	386	674
15,819	16,683	103	357	366	376	383
395	396	429	458	514	577	619
922	961	1,064	1,110	1,198	1,227	1,285
14,132	14,741	16,294	346	566	675	677
817	872	911	1,022	1,073	1,325	317
513	837	935	1,058	1,253	1,277	1,303
1,420	6,311	17,012	946	1,200	1,479	1,480
1,497	1,519	1,591	2,008	30	238	871
1,351	1,446	1,575	1,666	1,752	1,760	1,791
1,801	1,840	1,894	1,960	1,996		

The Journal of Fabrics

AND

Textile Industries.

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Notices.

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Authors are requested to retain copies of their manuscripts; rejected manuscripts cannot be returned.

To prevent any misunderstanding, all Articles sent to the *Journal of Fabrics and Textile Industries* for publication will be considered as offered *gratuitously*, unless it is stated explicitly that remuneration is expected.

Readers are invited to forward items of interest to the Trades concerned.

The Proprietors will feel greatly obliged if any of their readers, in making enquiries of, or opening accounts with, Advertisers in this paper, will kindly mention the *Journal of Fabrics and Textile Industries* as the source from whence they obtained their information.



Manipulation of different kinds of Woollen Goods, and the Processes of Washing, Scouring, &c.

By T. FRUSHER.



WOOL possesses fineness and elasticity of fibre not met with in any vegetable fibres. Wool is naturally white, yellow, or brown, and is much more easily scoured and bleached, and also has greater affinity for dyes than cotton or other vegetable fibres. After wool is shorn off the sheep it is washed to remove ordinary dirt and natural grease which adheres to it, and to open it out generally. By this first treatment of washing wool, it loses from 20 to 50 per cent. of its weight. There are various methods of washing wool in its first state; formerly it was washed by placing it in large iron baskets and lowering it into rivers, and then raking it about for a considerable time. The following methods are employed in scouring loose wool:—The wool is immersed in a copper filled with stale urine, diluted with water, and heated to about 120° Fahr., remaining for about an hour in this solution. It is then laid upon a grating, placed over the copper to drain, and afterwards removed to another vessel to be washed with cold water. The following is an economical machine for scouring:—The wool is immersed in solutions contained in long tanks, and is made to pass forward from one tank to the other by an ingenious arrangement of rakes worked by machinery. Three of these vessels are placed in series; the wool is immersed in the contents of the first tank, which is a strong lye wash; then it passes across the rollers into a second and more feeble lye wash, and finally into a

third, where it is subject to the action of running water. A few months ago I was looking through a scouring and dye-house in Yorkshire, and I saw men scouring in similar machines to those I have just described; but instead of having rakes worked by machinery, to save hand labour, they were using hand rakes, and could just scour about 8lbs. or 10lbs. of wool at once. I mentioned this to the manager. He said, "Oh, those men can keep us going with scoured wool; they scour all we require for dyeing each day." So, because two men could scour all they required, he thought it not necessary to have the rakes worked by machinery, when one man would then have been able to manage, and it would have been easy work for him; also, at the same time, being able to scour three times the quantity of wool in a day that two men could by hand labour. If wool, after being washed, is not intended to be dyed, or if it has to be removed from the premises, or to be woven before dyeing, it is dried in hot chambers or in a drying machine. If, however, it has to be stowed away, it will be advantageous to run it through a solution of salicylic acid. This is an excellent preservative. After being stowed away for a considerable time, if thus treated, it will smell sweet like newly washed wool; if not treated as mentioned, after a time the wool will have a disagreeable, fusty smell, and be somewhat mildewed. After loose wool has undergone the necessary operations of washing, scouring, &c., as described before, it is opened out by machinery, which is generally termed *bumbling*; then after this process it has the burrs extracted; it is then ready for carding and spinning. In the West of England, the wool is chiefly sent to the dyer in the loose state, but in some of the Yorkshire districts, the wool before being sent out for dyeing is combed and made into tops; it has then to be reeled into hanks, and scoured again before dyeing, in most instances, to remove the small quantity of oil and grease which has adhered to it in carding and combing. There are different methods employed in scouring wool in the hank. One is as follows:—in an ordinary square washing tub, having a pair of rollers, the wool is immersed in the scouring fluid which the tub contains, then passed through the rollers, which squeeze back the soap into the tub; the wool is then woozed in a hydro-extractor, and is ready for hanging on poles to be dyed. Another method is "sticking up" the wool just ready for dyeing, then scouring in a cistern the same size as dyebaths, and in the same way as dyeing, giving the wool about two turns in scouring fluid; then it must be craned out of bath and carefully washed with cold water whilst standing in a frame. By this method both time and labour are saved, because the wool, after being scoured and washed, is quite ready for dyeing, being already stuck up, whereas, by the other method, after scouring, &c., it has to be stuck up on sticks before it is ready for dyeing. For yarn scouring, the cistern method presents many advantages over roller scouring. The following are the detergents in use in the woollen industry for scouring purposes:—Urine, ammonia, soda ash, soap, silicate of soda, and various compositions containing carbonate of soda.

AMMONIA.—For the treatment of wool, that distilled from human urine is preferable to all other kinds. The crude ammonia distilled from gas liquor frequently contains hydrocarbons and sulphide of ammonium; the hydrocarbons act strongly on the skin of the workmen, and sulphide of ammonium is injurious to the wool.

SOAP consists of a fatty acid, and either potash or soda.

SILICATE OF SODA.—This is a good scouring agent; it cleanses wool very satisfactorily, and leaves it in a suitable condition for the reception of dyes, especially those of aniline colours. The scouring bath for wool should be heated to about 125° Fahr.; then the steam should be shut off, and the required quantity of soap and ammonia added, according to the state of the wool. The soap and ammonia should not be added to the bath until it is at the proper scouring heat. Ordinary yarns require the same heat as wool, but woollen yarns, especially of a low quality, should be scoured at a higher temperature than ordinary wool or yarn; but the bath should not be at a boiling temperature; many dyers think that boiling scours are best for woollen yarns. Anyone who has tried the different heats, and also taken into consideration the strength of the woollen fibre before scouring, will find that when scoured at boiling heat the thread is very much tendered. This tenderness may be avoided by not heating the bath to more than 175° Fahr., and adding an extra

quantity of ammonia to scour liquor; then much better results are obtained than from boiling scours. The baths should not be kept up too long, as the scouring fluid after a time becomes very greasy, and the soap commences to be insoluble, and instead of thoroughly cleansing the wool, it attaches itself in insoluble lumps on the wool, which cannot afterwards be entirely washed out. The best quality of wools should not be scoured in the same bath as the lowest class. Great care should be taken in working wool in any state, either in scouring or dyeing, so as not to cause felting. In working woollen cloths they are, as is well known, liable to run up or contract in certain dimensions, becoming thicker at the same time. This action is produced purposely in fulling, and accidentally by too rough handling, whilst washing, dyeing, &c. In dyeing all kinds of wool and yarns too much care cannot be taken in the working of them. The majority of dyed yarns now sold are greatly decreased in value, and do not possess that loftiness they ought to do, owing to having been too roughly treated in the dyeing process.—*The Dyer and Calico Printer.*

The Society of Dyers and Colourists.

Practical Suggestions for Worsted & Woollen Manufacturers.



At the first annual meeting of the Society of Dyers and Colourists, held at Bradford, some very practicable suggestions were made by Mr. Swire Smith, one of the Commissioners on Technical Education. After dwelling at some length on the importation of wool and woollen textiles into this country, and on the mechanical proficiency attained in spinning and weaving, he spoke strongly on a matter of vital interest to the worsted trade—that of design and colour in the production of worsted fabrics. He said:—“Taking last year as an illustration, we exported last year about £50,000,000 value of cotton goods, of which about £20,000,000 worth were dyed and printed. The question naturally came where all these dyed and coloured prints were sent to? They were very largely sent to the East, to the South, and to South America, but very few went northwards. One might easily say that these goods were sent to these countries because the climate of these countries was hot, and that in many instances wool goods would not be worn on account of the heat; but, as a matter of fact, even in the warmest countries where clothing was generally worn, that which was made from wool was very largely used. But in many of these countries to which there was no direct export from this country one might find worsted stuffs worn, printed and dyed, in the primitive methods adopted in those countries. He believed the chief reason why these cotton prints were so extensively bought in those countries, and why we did such a large export trade in them, was because of the attractive designs which adorned the surface of the cotton. As much taste was displayed in designing for the East and for semi-barbarian and semi-civilised countries as there was for the more civilised peoples close about us, and the goods, which were specially designed for these markets, were sold there in enormous quantities, and were often considered to be a most profitable branch of the calico-printing industry. He should like to ask why did not they put pictures upon wool fabrics; why did not they more extensively adorn the plain worsted fabrics which were made in Bradford by pictures? Of course they would tell him that there were many printed worsteds, that there had from time to time been fashions in which various varieties of printed worsteds had come up and had had their short run and had gone again, but this industry had never taken firm root in this country, and, so far as he had been able to trace the printing of worsteds, had never been an industry which had made headway in any of the countries to which calico prints were now so extensively exported. These great markets being, as it were, closed against us now, was it possible that they could be invaded? There was one way by which they could be invaded, it seemed to him, and that was if the worsted manufacturers could secure very cheap wool, and could apply designing and printing equal to that already on the goods which these people bought. When Bradford wrested the trade from Norwich, England did not import any colonial wools, but now much wool was imported, and wool, generally speaking,

was never cheaper than now, and it might be naturally expected that before long it would be cheaper still. There was every reason to believe that with the scientific and other experiments which were now going on, and with the facilities which were being developed for bringing the carcass of the sheep from abroad into England there would be more sheep grown in the colonies, and the production of wool would swell in proportion, and would naturally gravitate to England as the great selling market for it. He was disposed to think that the worsted trade was still very much based upon the traditions that were in vogue twenty, thirty, or forty years ago, when English wool ruled the price of the market. People had not got rid of that idea yet, and did not consider that there was so much wool coming into the country from the colonies and elsewhere, that our own wool was comparatively unimportant when brought alongside it, and that, in reality, to a very great extent, wool was destined to rival cotton, probably in its production and consumption, and probably also in the profit to be realised from its manufacture, if only the manufacturers would place themselves in such a position that they could compete with cotton in all our markets. There was, he thought it might be prophesied, a great future in store for the Bradford industry, but if those engaged in it meant to take full advantage of the increasing raw material which they had at their disposal, and if they were determined to enter all the markets of the world and compete there with the cotton and other fabrics, the great thing which would have to be secured was that the designing of this district should not be surpassed by the designing in the calico manufacturing districts, and that there should be talent brought to bear in this department of the worsted trade equal to that which was applied to the cotton trade. In conclusion, Mr. Swire Smith said that the practical carrying out of these suggestions would bring great wealth to the dyers and colourists, would bring large and increased prosperity to the manufacturers, would give increased employment, and more profitable employment probably, to our operatives, and would constitute, he believed, a new departure for the woollen industry of the world.”

How to Burn Coal Dust.

Economy is the order of the day, and anything that promises a reduction of expenditure in manufacturing should be put in force, says the “Mechanical Engineer.” Coal dust is fuel of the best quality, if it can be burned easily; and that it can in an ordinary furnace, a young engineer of New York, B. Smith, has demonstrated. Mr. Smith had taken a contract to run the steam power department of a factory, and in seeking to reduce expenses, he naturally sought the greatest item—the fuel. How to burn the dust, or culm, which can be had for a dollar a ton, or less (in some places for the carting away), was the question he wished to solve, and by experimenting, he found a plan which succeeded perfectly, and he presents it through the “Mechanical Engineer” to the steam using public. Mr. Smith riddled the culm through a sieve, the mesh of which he did not mention. From this he obtained a small proportion of good coal. On leaving off work at night he made up a good fire with coal, and on the top of this he put ten or twelve inches of culm, or dust, wet down just so that it would slide off the shovel easily. This was practically banking the whole fire with a blanket of culm, and in this condition it remained until morning. Before starting, Mr. Smith made holes clean through the culm, to the grate bars, and then put on the draft. The fire thus treated would run five hours, or until noon, with plenty of steam all the time. At twelve o'clock the same method was repeated. The results, Mr. Smith states, were a great saving in fuel, and he seems to have been in a position to judge, for the saving was his profit, or a portion of it, on the contract he made. The only change made was in the grate bars, which were much heavier than the old ones, and with narrower air spaces; half an inch, we believe, Mr. Smith said. This plan was new to our informant, and is to us; we consider it of sufficient value to our connection to make it public. It must be remembered, however, that this was anthracite culm; but how it would work with bituminous, or semi-bituminous coal slack, we do not undertake to say. The plan needs good natural or forced blast to make it successful, as engineers will easily see.



Ramie Culture.



R. FELIX FREMEREY, formerly publisher of the *Rhenish Jacquard*, Aix-la-Chapelle, but now living at Newark, N.J., delivered a lecture in the Exposition, New Orleans, on the "Culture of the Ramie and Forest Nettle in the United States." After a brief introduction, Mr. Fremerey proceeded as follows:—Gentlemen, considering it unnecessary to waste the precious time of a convention of earnest people in repeating the story of the ramie from the earliest times up to this day, I have resolved to submit to you only a sketch of this costly plant from the date, when, by the intelligence of an Englishman, it was brought to light and adapted to practical use. About the year 1810, a small quantity of ramie, or as the English people erroneously called it, "China grass," was brought to England from China by an East Indian. Mr. John Marshall, of Leeds, in Yorkshire, purchased the fibres, which had been decorticated and scraped by hand by the Chinese. Many were the trials of Mr. Marshall and his sons in endeavouring to ungum the fibres, which were held together by a strong resinous matter. He succeeded at last, after experiments of more than forty years. At the first London Exposition, in 1851, which I myself visited, he gave proof of his perseverance and energy by exhibiting fabrics which were of such beauty and splendour, and the colours of such brilliancy, that they at once excited the admiration of the textile manufacturers and of the learned world. The reports of the French representatives of that exhibition mentioned these fabrics in most flattering terms, and the first impetus to the use of the ramie fibre was given. English people, practical as they are in business matters, soon conceived the immense future of the ramie, and quietly, but steadily, introduced into their industries the use of its long, strong and silky fibre, and for a long time monopolised its manufacture. In the meantime the French people also became aware of the great value of the ramie fibre; ramie roots were planted for trial in the Jardin d'Acclimation by the celebrated Professor Decaisne, of the Paris Museum, and proved a great success. This led French textile manufacturers to experiment in the use of ramie, and at the Paris Exhibition of 1868 the first French fabrics made their appearance; they proved a full success, and interest in the ramie fibre grew from day to day. The devastations of the phylloxera in the vineyards of Southern France called the attention of the country to the ramie, and trials with the ramie gave favourable results. Plants were furnished from Algiers, where a nursery garden had been started in 1852, and from 1856, when the Société Nationale d'Acclimation began the protection of ramie culture, we see its production growing from year to year. England was the principal purchaser of the stalks, the French textile manufacturers, with a few exceptions, being only idle spectators. English industry pushed the use of this valuable fibre to such an extent that the importation list of Great Britain for the year 1865 showed the use of the enormous amount of 7,646,507 pounds, imported mostly from Shanghai and Hong Kong. Since that time this quantity has increased more than tenfold, its use being mostly due to the improvement of English and French decorticators, combing and spinning machines. I do not exaggerate in stating, that at this very moment, more than seventy large factories in the district of Yorkshire are exclusively engaged in the manufacture of ramie fibres imported from China, Japan, Ceylon, Egypt, Algiers, Java, Sumatra, Borneo, Celebes, Madagascar, English India, West India, and other southern countries, and large quantities of ramie fabrics, consisting of yarns, handkerchiefs, neckcloths, lace curtains, stockings, velvets, seersucker, table-cloths, damask for furniture purposes, and hundreds other useful articles, are shipped to the United States. In France there has also been a mighty development of the ramie industry for four or five years, and some six or eight large stock companies have been organized and are using the products of the French ramie culture. Among them is the society *La Ramie Française*, running 10,000 spindles at their factory at Valobre, near Avignon. I have before me a list of more than twenty French ramie manufacturers, many of them having exhibited their beautiful fabrics at the exhibition of Amsterdam, Holland, in the year 1883, and at Lyons ramie is much used by manufacturers of silk dress goods, both for warp and woof. The cultivation and industrial use of ramie in France is now progressing every day, both in quantity and quality, and the government and the people are looking with much favour and hope upon this new source of gain, of which a French senator and celebrated national economist, in visiting an exposition of ramie articles, exclaimed, "Ramie is a gold mine!" Germany, too, is rapidly advancing in the industry of ramie fibres. Several important stock companies have been organized in that country, and the fabrics manufactured there are considered superior to those of France and England. Gentlemen, I submit to your examination and judgement a collection of samples, consisting of ramie stalks, decorticated

ribbons, ungummed fibres, sliver, noils, yarns, stockings, handkerchiefs, plushes, and several other articles made at the factory of F. Seidel and Co., Zittau, in Saxony, and of M. Feray, at Essonnes, France. Before such incontestible facts and proofs of the usefulness of the ramie fibre, every pessimistic opposition should disappear, and I must express my astonishment that United States agriculturists and manufacturers should both look at this important matter with the indifference and the stoic tranquillity of a Roman commander in the midst of a bloody battle. Round about us great efforts are being made to introduce the ramie culture and the manufacture of its precious fibre. The Governments of Italy, Spain, Portugal, Mexico, Guatemala, Peru, English India, Egypt, Netherlands, India, Morocco, the Sandwich Islands, and many others, are unceasingly preaching and encouraging the cultivation of the ramie plant, while in Germany, whose climate is unsuitable for this culture, the government is protecting in every possible manner the planting of the European wild nettle, *Urtica dioica*, which has an abundance of long, strong and silky fibres. The United States government, recognizing the usefulness of the ramie culture, have distributed from time to time large quantities of ramie seed among various agriculturalists, and in the year 1873, a French gentleman, Dr. Emile Lefranc, now living at New York, published a scientific treatise about the ramie culture in the Union, which was produced in the report. At the time a Southern ramie planting society was founded in the vicinity of New Orleans by the same Mr. Lefranc, but failed from lack of support of the industry. From time to time stimulating articles about this culture have been issued by zealous newspapers—I only mention the *New Orleans Times-Democrat*—and periodicals, and for several years the *New York Dry Goods Bulletin* has been indefatigably busy trying to prove by able editorials and every possible means, the immense benefits resulting from the cultivation of this plant. These articles made very slight impression on the public, until recently, when through the unexampled general depression of agriculture, industries and trade, the question once more arose. An interesting article about ramie, by Mr. Max Jägerhuber, was published in the *New York Bulletin* and reproduced in almost all the leading papers of the Union, the *Times-Democrat* included, and interest in the growth of the plant grows apace. Cultivators from the South and North began inquiring about seeds, roots, sprouts, the best modes of planting, the yearly returns, benefits, &c. Among the multitude of enquirers I find many names of cotton growers, principally of the Mississippi, all confessing that the cotton culture of to-day proves a very ruinous policy, and all are anxious to engage in the ramie or nettle culture. Gentlemen, having been connected for more than thirty-three years with the cultivation of ramie and the forest nettle, and having carefully watched the development of the industry of these textiles, my experience, I presume, entitles me to answer every question relating to this most important matter. Undoubtedly an immense future in the United States is in reserve for the ramie and nettle cultivators, and much of the prosperity of the country may also depend on its introduction here, for which reason, I will gladly put at the disposal of the public my knowledge of the culture and manufacture of ramie and nettle. My acquaintance with the subject is the result of long, long years' expensive trials and experiences, and my greatest satisfaction at all times will be that I may in any degree contribute to the prosperity and welfare of this great and beautiful country, which I have chosen for my adopted fatherland for ever. First, then, you will ask me, What are the yearly benefits to be derived from an acre of ramie plants? and second, Shall we be sure to have a market for our products? Upon the first question I have to answer that these benefits are mostly dependent upon the climate and the conditions of the soil of the country, as the ramie is a semi-tropical plant, and also upon the care that is taken in its cultivation.

(To be continued.)

Graphite as a Lubricant.

The use of graphite, sometimes styled plumbago or black lead, is becoming greatly extended as a lubricant, for the lessening of friction and heating of journals. For this purpose, it is growing rapidly in favour. For lubricating purposes none but the very best plumbago will answer. It must be pure and free from grit. This purity is attained, not by bolting it, but by floating the plumbago in either air or water. The water method is simplest, and during this process it is treated with a bath of dilute sulphuric acid, which takes up the particles of spar and iron, leaving the sulphates of lime, magnesia and iron easily washed out. For metal bearings the plumbago should be used with oil, but for wood bearings, after a few applications of oil and plumbago, the oil may be dispensed with and the dry powder only used. On hot axles or journals, it should be applied freely dry, then oiled up as usual. Although plumbago was used for this purpose more than 200 years ago, the true method of preparing it was not known until within a few years, so that it comes before the public almost as a new material.

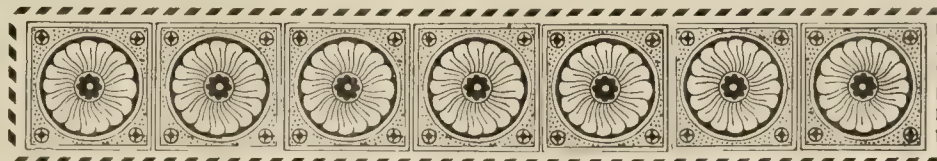
Chambers of Commerce and the Bankruptcy Act.



ABOUT a year ago a resolution was passed, at the annual meeting of the Association of Chambers of Commerce, recommending the various chambers carefully to observe the working of the Bankruptcy Act, and at the end of the year to send answers to a number of questions which were submitted by the Association. A report has been prepared which contains the substance of the answers received from 28 English Chambers of Commerce, viz.:—Barnsley, Batley, Bradford, Bristol, Cardiff, Derby, Dewsbury, Dudley, Gloucester, Halifax, Heckmondwike, Hull, Kidderminster, Leeds, Leicester, Luton, Macclesfield, North Shields and Tynemouth, North Staffordshire, Plymouth, Portsmouth, Southampton, Sunderland, Wakefield, Walsall, Warrington, Wolverhampton, and Worcester. The Chambers of Commerce at Birmingham, Falmouth, Kendal, Newcastle-on-Tyne, Nottingham, Middlesbro', and Oldham, reply that they do not send detailed answers to the questions, mainly, because sufficient time has not yet elapsed to enable them to form a definite opinion as to the operation of the Act. The first question was—"Does the creation of an Official Receiver secure prompt and effective action in discovering and taking charge of the bankrupt's estate, and enabling the creditors to deal with it in their general interest?" To this question 20 chambers gave a simple affirmative, two chambers think it is premature to form an opinion, and the remaining six chambers, that it has worked satisfactorily as to estates under £300. The Cardiff Chamber thinks that the action of the Official Receiver might be more effective if he exercised more promptness in personally acquainting himself with the exact nature and value of the assets and the true cause of the failure. The Worcester Chamber is of opinion that the effectiveness of the Act depends upon the qualifications of the Official Receiver. On the other hand the Leeds Chamber thinks that the Official Receiver is sometimes too prompt for the interests of the creditors, so as to prevent them dealing with the estate. Many of the chambers have understood the question as only applying to small estates, and several of them think it premature to express any opinion respecting its operation as regards large estates. The second question related to the number of receiving orders:—"What is the total number of bankruptcies in your district?" The answers from the 28 chambers show a total of 875 receiving orders. There is no information given by the chambers (except in a few instances), which will enable a comparison to be made with the previous year. The third question was important, as showing how many of the receiving orders were dealt with summarily:—"In what number of bankruptcies are orders for Summary Administration made under Section 121, and in how many cases have the creditors appointed an independent trustee?" In 603 cases, orders were made for Summary Administration under Section 121, and of this number only 25 independent trustees were appointed, this leaves 272 out of 875 as cases where the assets amounted to more than £300, and were therefore not dealt with in a summary manner under this section. The fourth question was as follows:—"Is the administration by the Official Receiver satisfactory in regard to the amount realised and promptness in closing the estates and paying the dividends; and are the costs of administration less or greater than under the Act of 1869?" In by far the larger majority of answers to this question the Chambers bear testimony to the increased promptitude and lessened expense of the new law, so far as respects the small cases coming under Section 121. The Dewsbury Chamber says that the cost of administration averaged last year 25 per cent. on the sum distributed, which was less than under the Act of 1869, but they consider even this percentage much too high. The Leeds Chamber states that of 35 Summary Administration Cases which have been closed, the cost of liquidation was less than 30 per cent. of the gross assets, and less than 34 per cent. of the net assets. With respect, however, to the larger estates, a considerable number of the Chambers say that the experience of the Act is too limited to enable them to come to an opinion. The Hull Chamber thinks that the payment of the Official Receiver by percentage stimulates him to get in all the assets he can promptly, to the neglect of the careful and proper investigation of the estate, and to the dealings and transactions of the bankrupt, so that in

large estates the trustee finds that he has practically all the work to do, although the Official Receiver may have received a large amount in fees, and they therefore suggest that the Official Receiver should remain associated with the trustee until the estate is wound up, and that the remuneration of both the Official Receiver and trustee should be determined by the Committee of Inspection at the termination of the bankruptcy. The Halifax, Sunderland, and Macclesfield Chambers are of opinion that the expenses in the larger bankruptcies are not less than under the Act of 1869. The following was the fifth question:—"Does the control of the Board of Trade, and the routine it imposes, tend to delay or to increase the trouble and cost of Bankruptcy Administration? Is that Department able to exercise an effective audit and control?" Of the 27 chambers which have answered these questions, seven do not possess sufficient information to form an opinion on these points—four, viz., Bristol, Hull, Portsmouth, and Warrington, think the control of the Board of Trade tends to delay; and the Derby Chamber thinks that the routine regulations of the Board of Trade might with advantage be relaxed, and that the audit should be made on the spot by some one possessing local knowledge. On the other hand, 13 chambers find the new process cheaper and quicker; 11 chambers think that the audit is effective; and three that are favourable to the Act decline to express an opinion as to the audit. The Bradford Chamber, while approving of the Act, thinks that more rapidity would be obtained if the Official Receiver were required to audit the accounts of the trustees in his district, as his knowledge of the circumstances attending the bankruptcy would be of use. The sixth question raised an important issue:—"Is the investigation by the Official Receiver of the past conduct of the bankrupt complete? Is it found that his representations to the Court, on applications for discharge, operate as an effective means of discouraging reckless or fraudulent trading?" Twenty-four chambers answer the first question in the affirmative, and of these 10 answer the second question in the affirmative, while 13 decline on the ground of not having had sufficient experience. Two chambers do not possess sufficient information to answer either question. The Bristol Chamber answers the first question in the affirmative, but says that in many district Courts the same answer does not apply: for instance, in many places the "public examination," which was looked forward to as one of the deterrent clauses of the Act, is conducted as heretofore, in the Registrar's *private* room. The seventh question propounded by the Association was:—"To what extent are Bankruptcy Petitions diminished under the Act; what are the causes of the decrease, and is the commercial community benefitted or otherwise by the result?" In answer to the first part of this question, 26 Chambers of Commerce have replied, of which 11 state that the decrease as compared with 1883 is 50 per cent. or upwards; nine chambers state the reduction as being as high as from 70 to 80 per cent., whilst six chambers, without mentioning any particular figure, state that the diminution is very large. As to the causes of this decrease, 19 chambers attribute it to the increase of private arrangements. With respect to the third part of the question, eight chambers are favourable, eight do not consider the Act satisfactory, and of these eight, two on account of the increased expenses and difficulties of working the Act. The Bristol and Plymouth Chambers are of opinion that every private arrangement should be registered, and any which are not registered should be considered illegal. The Wakefield Chamber attributes the decrease to the complex machinery of the Board of Trade, and the fact that the larger estates are dealt with under private arrangements, which is not considered satisfactory. The Bristol Chamber, while admitting the very considerable reduction in bankruptcies during the past year, says that this is no evidence of the beneficial working of the Act, and that the same result was experienced in the first year of the Act of 1869. The eighth question was as follows:—"Are the provisions as to Proxies in the First Schedule of the Act found to work satisfactorily?" Twenty-eight Chambers have replied to this question, of which 16 are unfavourable, seven favourable, and five give very qualified answers, to the effect that the rules are troublesome but perhaps unavoidable. The Macclesfield Chamber objects to the proxies having to be lodged the day before the meeting and filled up in the handwriting of the creditor. The Portsmouth Chamber concurs in these objections, and urges that the proxies

might be filled up by clerks or other persons in the creditor's employ, and further, that all proxies should allow the persons holding them to vote either for composition or bankruptcy. The Walsall and Wolverhampton Chambers also generally concur in these objections, the latter urging that the provision that proxies should be filled up in the handwriting of the creditor is vexatious, troublesome, and unnecessary. The Bristol Chamber remarks that it is a general complaint with creditors that greater facilities should be given them to appoint special proxies. The short notice given in some cases, being only five days, prohibits the possibility of obtaining the necessary forms. The ninth and concluding question was:—"Do the limits to the remuneration of solicitors and trustees, and the restraints on the latter by the Board of Trade, operate to prevent respectable men from undertaking bankruptcy business to the detriment of creditors?" Of the 28 chambers which have replied, 17 are of opinion that the remuneration of solicitors and trustees and the restraints on the latter operate in preventing respectable men from undertaking bankruptcy business; 10 are of opinion that it does not so operate, and one chamber is neutral. Some of the chambers think that its effect has been to induce solicitors to encourage private arrangements rather than subject estates to the operation of the Act. With respect to the general observations, they more completely manifest the opinions of the Chambers than the previous questions. While the Chambers, on the whole, are favourable to the Act, they show the desirability of introducing certain amendments into it, over and above those which are indicated in the answers to the foregoing questions. The Barnsley Chamber suggests that the instructions sent by the Board of Trade to the Official Receivers should be codified so as to ensure uniformity in their conduct of bankruptcy cases. The Bristol Chamber is of opinion that, with the view to the successful working of the Act, greater facilities should be afforded creditors to appoint special proxies; a local audit of trustees' accounts; list of creditors should be sent with the notice convening meeting; and an assimilation of the 23rd section with the 18th section, with the view to expediting composition arrangements. The Heckmondwike Chamber thinks that it is a defect in the Act that a creditor should lose his debt or dividend through lack of notice. It is difficult to see how this could be met, except by leaving the door open to fraudulent preferences. The suggestion from the Hull Chamber is that the onus of proof, to account for his deficiency, should rest upon the bankrupt. The general opinion seems to be that this is provided for in the public examination of the bankrupt. This chamber also considers that it should be the duty of the Public Prosecutor to institute prosecutions against absconding debtors. They also complain that the fees, scale B, *ad valorem*, come very heavy on large estates. The Luton Chamber says that every possible means should be adopted to deter private arrangements. The Macclesfield and Warrington Chambers think that the power of the Official Receiver to realize estates before the first meeting of creditors operates very prejudicially in many instances. The Wakefield Chamber would have preferred that the Act should have limited the duties of the Board of Trade to the collection of statistics and the general supervision of accounts, leaving the Official Receiver merely an Officer of the Court. This chamber also considers that the provisions as to book-keeping are too stringent when applied to small traders and shopkeepers, though approving of the punishment of debtors who either neglect to keep books or keep them fraudulently. The Worcester Chamber recommends that the limit of time within which fraudulent preferences may be impeached should be extended from three to six months. Four chambers complain that the charges allowed to auctioneers are excessive. In addition to the 18 chambers which consider that the reduction in the number of bankruptcies is due to the increased number of private arrangements, the Chambers at Barnsley, Dewsbury, Leicester and North Staffordshire, decidedly object to private arrangements unless they are registered. Mr. Leonard Bruton, who has, as is well known, paid particular attention to the subject of bankruptcy legislation, writes that he considers the best thing to be done would be to prepare a short amending Act for the registration of private arrangements. The London Chamber of Commerce endeavoured to get a clause to this effect inserted in the Act when it was passing through Parliament, and it is a pity that the President of the Board of Trade could not see his way to accept it.



Ornamentation of Textiles.

(Continued from Page 15.)



ACCORDING to tradition, this wonderful colour, which gains in intensity and brightness by exposure to the sun, and hence one reason of its great value to the ancients, was discovered entirely by chance; a shepherd's dog, driven by want and hunger to the sea shore, devoured a certain shell-fish, and therewith dyed its mouth so brilliant a colour that it excited the admiration of all who saw it. This small shell-fish is supposed to have been the "murex," the translation of which is "dye" of the fish, or a shell-fish. The murex is about the size of a walnut, and of the family of welks, and when washed by the sea it adheres to the rocks in the same way. The Abbé Raynal says, "No colour at present known can be compared to it, either as to richness, lustre, or permanency, and it is quite evident this is the source from which the Sidonian, Phœnician, and Syrian purples were obtained." M. de Sautley tells us that when he was in the neighbourhood of Sidon, he came across large accumulations of these shells, and at Pompeii there were found near the workshops of some dyers, heaps of the shells of the murex, and they all bore the mark of millstones, leaving no doubt that this costly and magnificent colour had been extracted therefrom. We may also mention that the Romans were acquainted with other dye-ware. Vitruvius speaks of the madder plant as one of the ingredients used in the purple dyes, and also of the Pastil (Isatis) (generally termed woad or dyer's woad), Kermes grains, weld or wold, cudbear, indigo, and carmine, all of which have been known to the ancients from time immemorial. Vitruvius again tells us that the Romans extracted many rich colours from plants, fruits and flowers. Whatever were the methods adopted in dyeing by the various nations in olden times, we must necessarily acknowledge that the ornamentation and embellishment of textile fabrics have advanced step by step—the embroideries on the one hand, and the dyes on the other—and by combining these two, the ancients have contributed, in no small degree, to art in the adornment of textiles. Amongst the Romans there was an indispensable custom of carrying the spindle and distaff before a bride when going to the nuptial ceremony, and the Roman housewives and matrons are said to have made garments, not only for their own use, but also for the wear and adornment of their husbands and sons. Augustus, we are told, usually wore robes of exquisite design, made by his wife, sister and daughter. Still we cannot say that the Romans were born artistes; in fact, before their intercourse with artistic nations, they knew nothing of the dignity of art; they were a people much given to pleasure and sport, and the higher grades of society took more delight in the amphitheatre, witnessing a bull fight, and in the performances of the circus, than in the cultivation of any works of art. The fine arts were introduced into Rome by Marcellus, who prided himself on being the first who taught the Romans to admire these works, and it was in his time that they began to devote a part of their time to disputing about arts and artistes; thus they gained culture, advancement and refinement from the nations with whom they came in contact. Accordingly, they adopted the arts and fashions of the people who were overcome by them, and we have no reason to doubt that they learnt the practical part of manufacturing textile goods from those whom they oppressed, and it was thus that an art, which had flourished with the Greeks, Egyptians, Persians, and Chinese, from the earliest times, began now to develop itself in Rome, and from this time the people spared no pains to equal, if not really to outstrip, their instructors, and they are said to have excelled in certain kinds of embroidery and needle-work, and to them the credit is given of inventing true lace work, called the "Scututata vestris," which was worn by persons of good position; this lace was worked on the garments with the needle. They adopted silk as a dress material about the first century before our era, and it became so common that it was worn by men and women, and by all classes of society; it was manufactured into so very fine and transparent a fabric that it was very objectionable as a covering, and Elagabalus is said to have been the first emperor who wore these silken garments. We have no very encouraging accounts of ornamentation in wearing apparel during his time, as he lived a very wicked life, a life of debauchery and cruelty. Tibullus speaks of this gossamer substance, and describes it as "lighter than the wind and clearer than glass." Seneca, whose morals seem to have been of a very doubtful character, condemns this flimsy fabric, which he says is a protection neither for the body nor for shame; so unbecoming was this gossamer attire in the commencement of the New Era, that by a decree of the Roman Senate (Tiberias A.D. 16), men were forbidden to wear and disgrace themselves with silken attire. We read of all nations and tribes being given to ornamenting their dress or their bodies, therefore we are justified in saying nothing new has been invented; we have but re-discovered and possibly improved upon the means employed by our forefathers, as we shall try to illustrate in following chapters.

(To be continued).



ORIGINAL DESIGNS.

Another elegant design for a Lace Curtain has been drawn for us by Mr. George Lees, Commercial Buildings, Kidderminster. This forms the subject of our first plate. It will be seen from the design that Mr. Lees possesses great inventive faculties, which he displays in the production of designs for all classes of fabrics.

We give on our second plate a couple of designs, possessing exceptional merit, for Silk Goods. These have been designed by Mr. J. L. Horner, 26, Cannon Street, Manchester.

On our third plate is a design for a Toilet Quilt, drawn by Mr. J. G. Bowins, who has removed from Victoria Buildings to Dow Street, Brunswick Street, Manchester. This designer is greatly extending his business, particularly in the card-cutting branch, and manufacturers, who require work of this class executing, would do well to give a trial to Mr. Bowins.

TO MANUFACTURERS AND DESIGNERS OF CLOTH.

The latest patterns of French and English Coatings, Vestings, Suitings, Fancy Cloths, Cassimeres, Tweeds, Mantle Cloths, &c. These Patterns give the latest Designs and Colourings for Cloths for the Spring and Summer Seasons in 1886.

100 SAMPLES FOR £2. CARRIAGE PAID.

A remittance must accompany order, made payable to H. and R. T. Lord, the "Journal of Fabrics and Textile Industries." Office, 10, Ann Place, Bradford, England.

MONTHLY TRADE REPORTS.

The second series of London sales of Colonial wool commenced on Monday the 17th ultimo. There was a good attendance of home and foreign buyers, and the biddings were continued with animation. Taking the market as a whole, there was but little difference in the prices compared with the closing rates of the last series, but, it may be stated generally, that while crossbreds were in much request, and fully $\frac{1}{2}$ d. per lb. dearer, the prices of most of the merino kinds were slightly in favour of the buyers; and whilst all scoured wools ran $\frac{1}{2}$ d. per lb. cheaper, good Australian greasy combing sold at former rates, but for the most part, the medium, inferior and faulty greasy kinds, had a somewhat downward tendency. In the Bradford district, prices have been slightly better than they were last month, but they have not yet reached the London rates. Business has been very limited, both in wools and tops, and staplers have complained of the very small margin of profit that has been obtainable. The trade in English wool has been also very dull, but in some quarters there is a little more enquiry, still there is no improvement in the number of sales that have been effected. In yarns we have not any great amendment to chronicle; a few Continental orders have been received, but, as a rule, export houses are far from busy. In the piece branch, manufacturers experience a difficulty in finding orders sufficient to keep their looms running, home and foreign trade being equally dull. In the worsted coating department there is little doing, and of cashmeres, especially in the American trade, the same may be said. In Huddersfield, employment keeps fairly good, as manufacturers have secured large orders for season's goods in advance, but purchases from goods in stock

have been made with caution, although in some cases they have been offered at reduced rates. The fancy worsted trousering manufacture is claiming much attention in this district, and is making rapid strides towards superseding the woollen tweed trade. In Leeds, the purchase of cloth is still below the average, buyers investing only in fine worsteds, fancy tweeds, and other choice goods necessary to keep up an assortment of stock. In the shipping branches there has been an active trade passing, and the principal manufacturers have been fairly busy, and orders for army cloths have been freely given out.

Lace.—The lace trade has been in a depressed condition and the curtain trade far from brisk, and although the amount of business done has been considerable, still competition has been so keen that it has not been at remunerative rates.

Carpets.—This branch has been busy as far as the quantity of machinery employed is taken into account, but prices, except in special cases, are unremunerative. Royal Axminster carpet manufacturers have been tolerably busy, and landscape carpets seems to have taken the fancy of merchants, but we think it is only a passing fashion and will not have a long run. The tapestry branch has been rather quiet, and the ordinary run of Brussels has only met a moderate demand. Manufacturers complain greatly of the unremunerativeness of the carpet trade as a whole, and there seems but a slight prospect of any improvement in this respect, owing to the excessive competition at present taking place.

Cotton.—In the raw material values have fluctuated according to the demand, but on the whole prices have been fairly steady. In the yarn branches stocks have accumulated to an extent to cause uneasiness to spinners generally, and prices have had a drooping tendency. In cloths no improvement has taken place, and production has been curtailed by the short time movement, which has extended. There has been a fair inquiry for the lighter makes of cloths for abroad, but at such prices as to prevent manufacturers accepting them, unless it has been for the purpose of keeping machinery running. The velveteen and cord trade has been moderately active, there having been a demand for these goods for some time past. The Easter holidays have been taken full advantage of, and machinery has ceased running, as a rule, during the week.

The Textile Industry in Mexico.

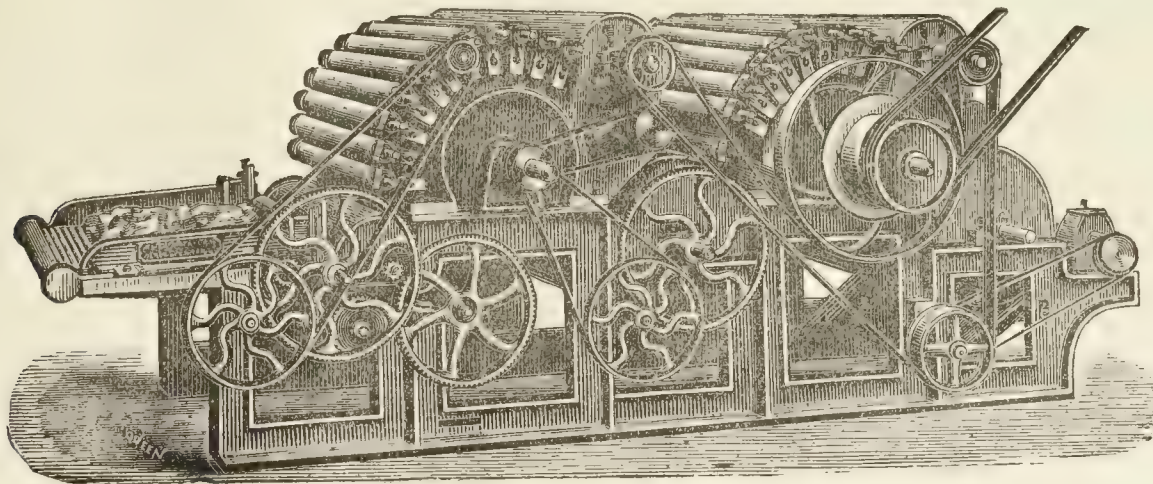
The textile industry of Mexico extends to the cheapest and simplest goods for the consumption of the lower classes of the population. The largest number of cotton mills are producing solely a sort of unbleached muslin, called "Manta," which serves for the principal garments of those classes, but the demand is far too great for the utmost capacity of the Mexican textile industry. Another fabric, "Lona," largely used, is made of loose, cheap material, similar to duck. The production of prints of six mills amounts to about 23,000 pieces per month, of good quality and of a rather good taste. Prints, as well as the first mentioned goods, meet with ready sales at paying prices. Notwithstanding the high duties in Mexico, the textile industry is not able to compete successfully with European and American goods, or to attain a similar capacity for a number of years to come, as the necessity of increasing the production is not urgent. The consumption of imported goods of a better quality is comparatively low. There are at present 87 cotton mills with 249,750 spindles and 8,758 looms working, while in the wool branch 10 mills with 9,364 spindles and 369 looms are running. The value of this machinery is estimated at \$4,690,775, divided among 97 mills. In the state of Puebla, where this industry is relatively most represented—21 mills, 72,000 spindles—no cotton is produced; while in Vera Cruz, where 40 per cent. of the cotton is produced, not one spindle can be found. Steam-power is employed exclusively in eight mills, 35 mills use water-power, while 54 mills run on both steam and water. There is a total of 12,728 operatives, including 2,111 women and 2,555 children. The yearly consumption of cotton amounts to 263,812 cwt., and that of wool 58,200 cwt., from which, monthly, 33,614 kilogs. wicks, 239,251 kilogs. yarns, 255,984 pieces cotton goods, and 22,800 pieces prints are produced. The largest mill contains 13,000 spindles.

MACHINE "GARNETT"

*For Opening Hard Twisted
Woollen and Worsted
Waste.*



*À ouvrir les laines fortement
frisees et les dechets
de laine.*



These Machines are guaranteed to be of the very best quality, both as regards material and workmanship, and possess many recent improvements.

We beg to announce that we have just obtained
ROYAL LETTERS PATENT

For improvements in these Machines, whereby we are now able to put 14, 16, and even 24 rows of teeth per inch on to the cylinders, whereas formerly we could not exceed 12 rows per inch.

Ces machines sont garanties de première qualité, sous le rapport du choix des matériaux et de la construction. Elles renferment plusieurs perfectionnements tout nouveaux.

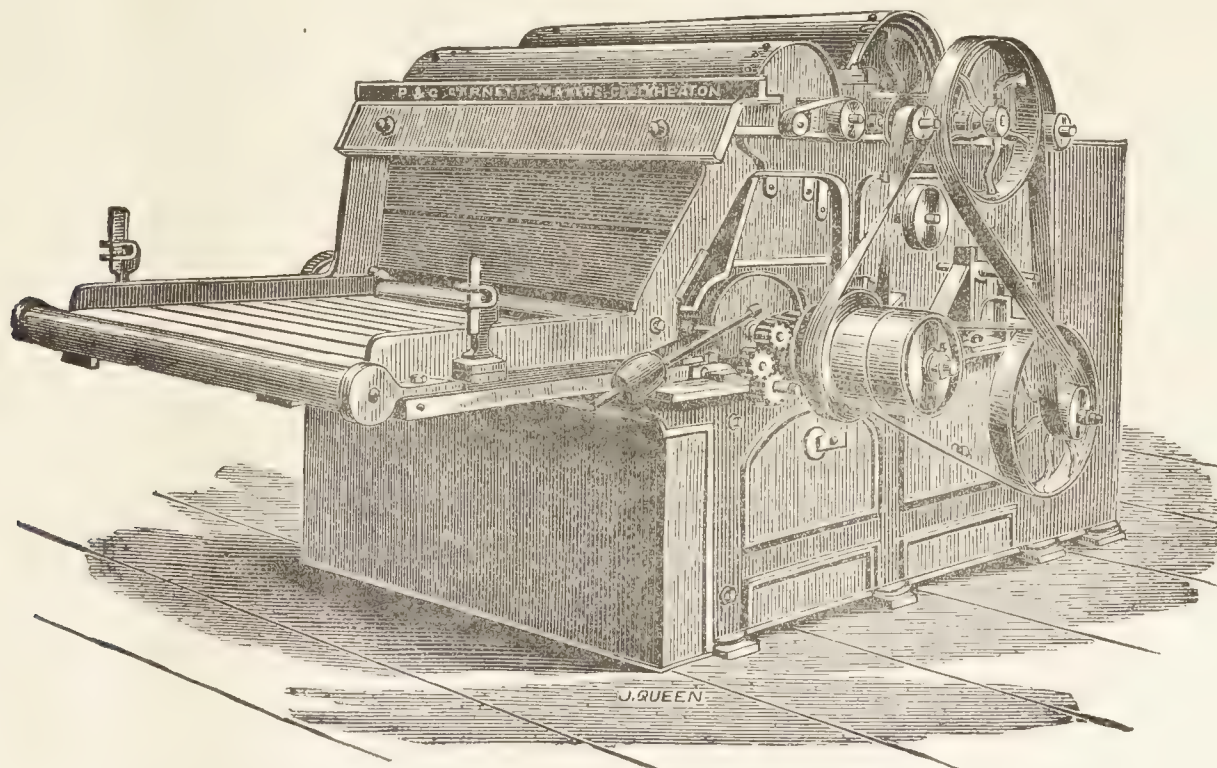
Nous venons d'obtenir
UN BREVET ANGLAIS

Pour un perfectionnement au moyen duquel nous pouvons placer 14, 16 et jusqu'à 24 rangs de dents au pouce sur les cylindres, tandis que jusqu'alors nous ne pouvions dépasser 12 rangs au pouce.

P. & C. GARNETT, SOLE PATENTEEES,
CLECKHEATON, YORKSHIRE.

WHO ARE ALSO MAKERS OF
GARNETT'S PATENT COTTON GIN,
Unequalled for fast Seed Cotton.

NOUS CONSTRUISONS AUSSI
L'EGRENOIR BREVETÉ DE GARNETT
Sans rival pour la préparation des cotons à graine dure.



**IMPROVED WOOL CLEANING AND BURRING
MACHINE,**

Capable of cleaning 1,500 lbs. to 1,600 lbs. of Wool per day. The very best and most economical machine for this purpose which has yet been introduced to the public. Also

GARNETT'S PATENT METALLIC CARD,

For covering burr rollers and breasts of carding engines for woollen and worsted, and
TAKERS-IN OF COTTON CARDING ENGINES.

From Mr. ROBERT PLATT.

Stalybridge, May 9th, 1877.

In answer to your inquiry of the 7th, I have had your patent Metallic Cord in use more than twenty years, and am very much pleased with the working of it. Its advantages are that it is much cleaner and less costly than leather or any other covering.

Agent—Mr. C. BORISSOW, Rue a Fiens, 3 ter. Lille, FRANCE.

**LA MACHINE PERFECTIONNÉE À NETTOYER
ET ÉCHARDONNER LES LAINES,**

Pouvant nettoyer 1,500 à 1,600 livres de laine par jour. C'est la meilleure machine et la plus économique qui ait jamais été offerte pour cet emploi à l'industrie. Nous construisons aussi

**LES CARDES MÉTALLIQUES BREVETÉES
DE GARNETT,**

Pour garnir les alimenteurs, et poitrinières des cardes à laine et à laine peignée

LES BRISEURS DES CARDES À COTON.

Attestation de M. ROBERT PLATT.

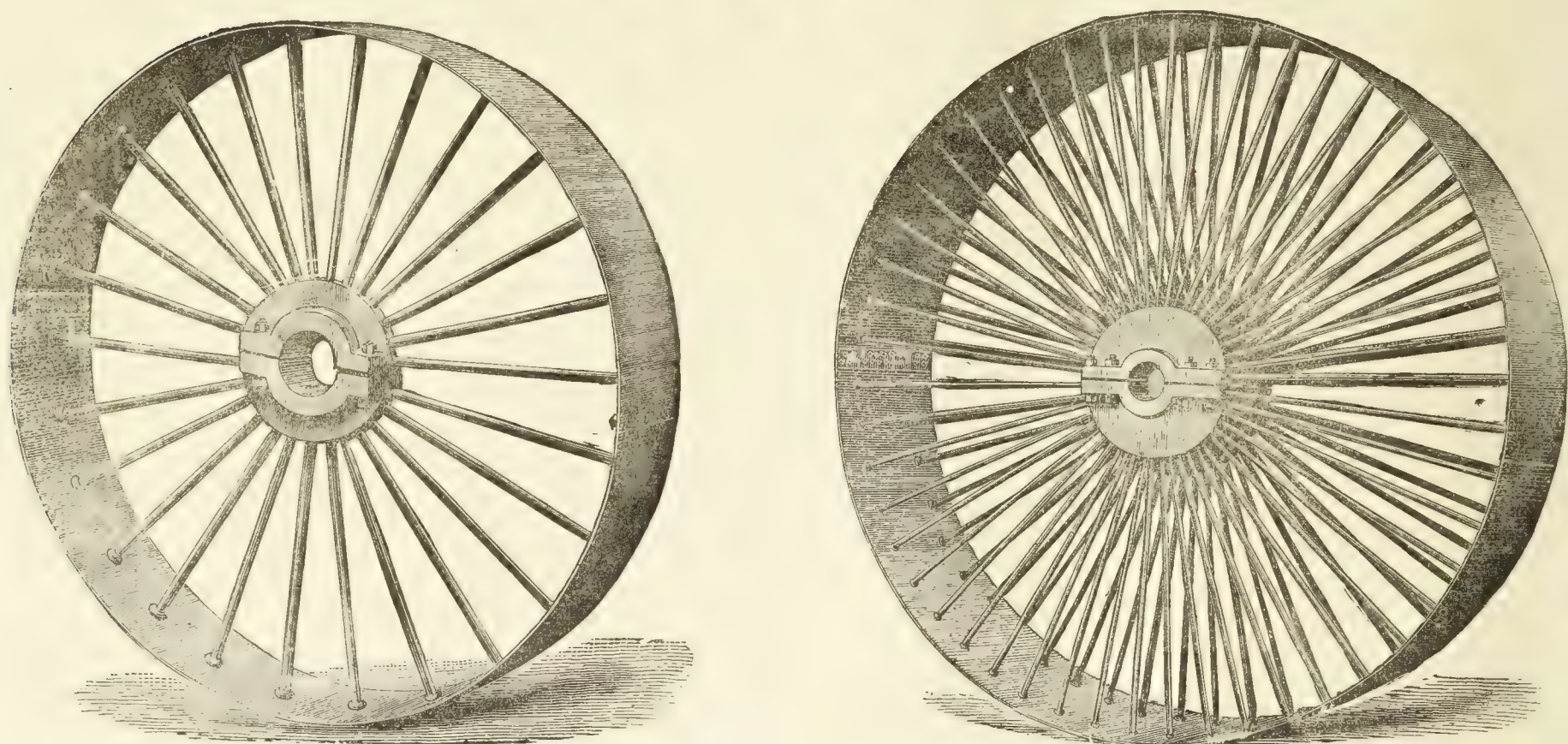
Stalybridge, 9 Mai, 1877.

En réponse à votre lettre du 7 ct. j'emploie depuis plus de vingt ans votre système breveté de cardes métalliques et j'en suis très satisfait. Il possède l'avantage d'être beaucoup plus propre et moins cher que le cuir ou tout autre genre de garniture.

RODGERS' PATENT WROUGHT IRON PULLEYS, SPLIT OR SOLID.

ALL SIZES FROM 6 INCHES UP TO 24 FEET DIAMETER.

Over 45,000 in use.



THE BEST PULLEY IN THE WORLD.

Wrought Iron THROUGHOUT, RIM, ARMS and BOSS.

THE ONLY WROUGHT IRON PULLEY MADE.

SOLE MAKERS—

HUDSWELL, CLARKE & Co.

RAILWAY FOUNDRY,

LEEDS, ENGLAND.



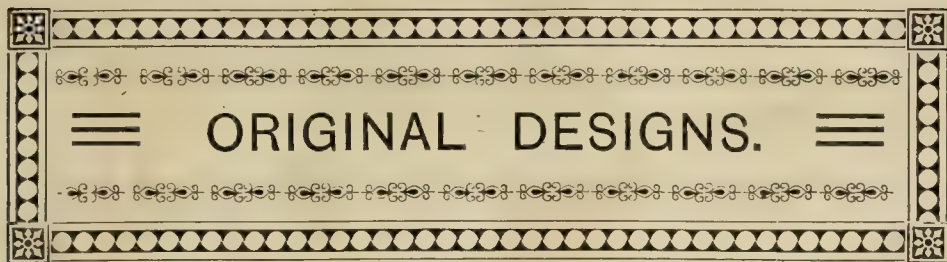
LACE CURTAIN.



SILK GOODS.



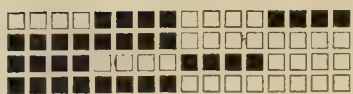
TOILET QUILT.



Worsted and Woollen Trouserings.

No. 275.

Warp :



Design.

7 Bottle Green.
1 Light Green.
4 Black and Green.
3 Bottle Green.
1 Light Green.

Weft : 15 Bottle Green.
1 Black and Scarlet.

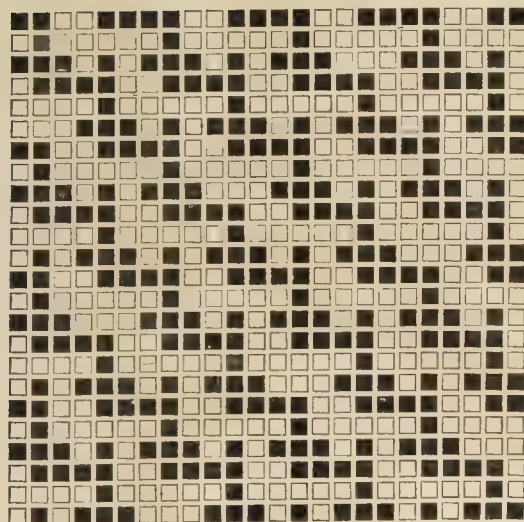
16 ends.

16 picks.

75 picks per inch.
64 ends per inch.
16's reed.
4 ends in each split.
68 inches wide in the loom.
56 inches wide when finished.

Warp and weft all worsted,
14's twist.

No. 276.



Design.

Warp :

1 Lavender worsted 25's
twist.
1 Lavender woollen, 30
skeins.
1 Lavender worsted.
1 Black worsted.
1 Black woollen.
1 Black worsted.

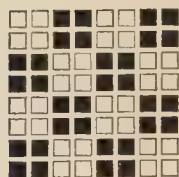
6 ends.

Weft :

84 picks per inch.
78 ends per inch.
13's reed.
6 ends in each split.
66 inches wide in the loom.
56 inches wide when finished.

1 Black worsted, 25's twist.
1 Black woollen, 11 skeins.
2 Black worsted.
1 Black woollen.
1 Black worsted and Orange
silk, slack twist.
6 picks.

No. 277.



Design.

Warp : 2 Dark Blue.
2 Light Green.
2 Black.
2 Light Green and Medium Blue.

8 ends.

Weft : 1 White.
1 Black and White.
2 Black.

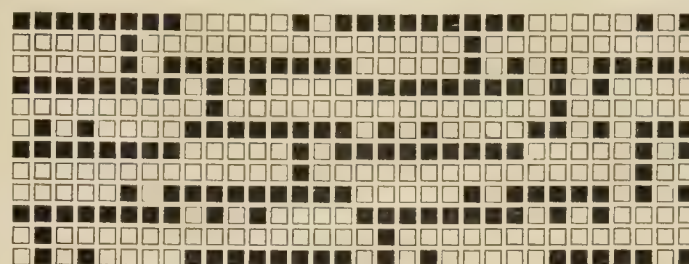
4 picks.

32 picks per inch.
28 ends per inch.
14's reed.
2 ends in each split.
72 inches wide in the loom.
56 inches wide when finished.

Warp and weft all woollen
twist, 21 skeins.

No. 278.

Warp :



Design.

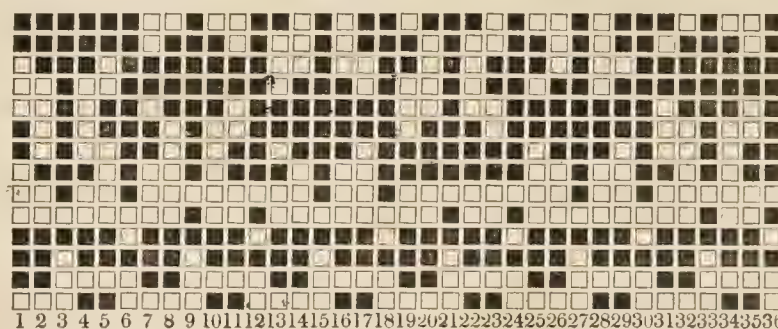
Weft : 1 Black, 25's twist.
1 Backing, 17 skeins.
1 Black, 25's twist.

100 picks per inch.
112 ends per inch.
14's reed.
8 ends in each split.
66 inches wide in the loom.
56 inches wide when finished.

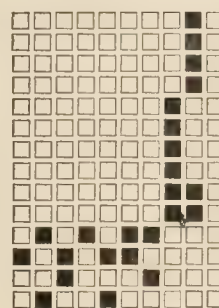
24 Black.
1 Dark Bronze.
1 Light „
1 Dark „
1 Black.
1 Dark Bronze.
1 Light „
1 Dark „
25 Black.
1 Dark Bronze.
1 Light „
1 Black & Blue
silk twist.
1 Black.
1 Dark Bronze.
1 Light „
1 Dark „
1 Black.
64 ends.

Worsted and Silk Trouserings.

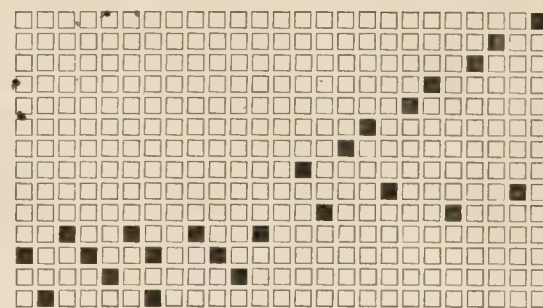
No. 279.



Design.

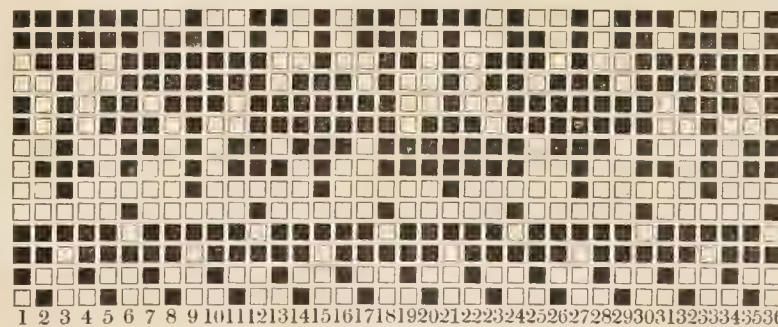


Draft for 279.



Draft for 280.

No. 280.



Design.

Warp :
1 Black 2/40 worsted } 12.
1 Angola }
1 Black }
1 Bottle Green 2/40 } 6.
1 Angola }
1 Brown 2/40.
1 Gold 2/30 silk.
1 Angola.
1 Brown.
1 Bottle Green.
1 Angola.
1 Brown.

Weft :
1 Old Gold 2/40.
1 Peacock Green.
1 Angola

110 picks per inch.
32 inches wide in the loom.
28 inches wide when finished.

Warp 3,024 ends.

Angola 375 yards per oz.

New Patterns of Worsted, Woollen, and Mixed Cloths, for Spring and Summer, 1886.

The patterns of Worsted, Woollen, and Mixed Fabrics for ladies' and gentlemen's wear for Spring and Summer, 1886, which will be the prevailing fashion during those seasons are, as a rule, an advance, in many respects, on those produced last year by manufacturers, and which are now coming to the front in the market. In worsteds for gentlemen's coating wear, there will be still a demand for small effects in designs for the finer qualities of cloths, but with rather subdued colourings, the majority of samples having fewer bright shades amongst them. Silk will be utilised, but in slighter proportions, and in finer counts of weft; the dotted effects will still be prevalent in many cloths. In worsteds, for trouserings and vestings, more variations in colour will be prominent, the patterns also being in small designs, and silk will be used in most of the fabrics, especially for vestings. In the lighter coloured cloths for export, some very striking samples are now before us, both in worsted and woollens, &c., the designs being generally in broken patterns, not distinct checks, stripes, &c., but a mixture of both. The colourings are very varied. In woollens, there is nothing very novel in either designs or colourings; such rapid strides have been made during the past few years in the production of tweeds, cheviots, &c., in texture, finish, design, &c., that designers and manufacturers are taxed to the uttermost to put novelties on the market. In the lower classes of woollens is this especially the case, as merchants so often demand nearly the same design, colouring, and general effect in low and medium cloths, that are produced in the better qualities. The samples of tweeds now before us vary but slightly from those described in a former issue of our Journal, although a few new patterns are amongst them. Many of these are in small neat stripes, less than $\frac{1}{8}$ inch wide, which show distinctly the spaces between, the stripes showing less prominently, being filled with mixtures of three or four colourings. The check effects are more or less broken to produce slightly indistinct effects, although some are bold and show the pattern markedly. The colourings vary considerably, some of the samples containing the brightest hues, and others being of a subdued character. The same particulars apply generally to cheviots and similar classes of fabrics. The warp and weft used in most samples are not of as course a nature as during the past seasons, the tendency being to the finer and medium qualities of yarns. Packets of these samples may be had from our office, as in former seasons, at £2 per 100 samples.

Woollen Manufacturing in New Zealand.

The correspondent of Bradstreets, in New Zealand, in his report respecting industrial affairs in that country says of the woollen industry—that having been established ten years ago through the offer of a bonus of £1,500 (\$7,600.00) it is now flourishing. There are several woollen mills in New Zealand, and all doing well, their cloth and blankets being in good demand in the home and Australian markets. New Zealand tweed is also made to order, and shipped to Scotch wholesale cloth houses. The Kaiapoi Woollen Company, the last formed, showed a profit of £18,277 on the year. An interim dividend of ten per cent. had been paid, and a further ten per cent. dividend was declared, making twenty per cent. on the capital stock for the year, while £5,000 was carried over to next year. The machinery and skilled labour has all been imported from Great Britain. This is a sample of what may be done without "protection" by enterprise, honest management and skill. The average rate of wages is as high as in the United States.

The boiler that carries out water with its steam may show a large apparent evaporation, but the steam, being wet, is of much less value in the engine. A boiler should give a dry steam in all cases.

G. Schneider W. Sohn, at Cologne, has been granted a German patent for an improvement of woven belting. The belting consists of several layers of cloth sewed together; the cloth being woven of strongly twisted flax warp, strained to the utmost, and slack twisted filling of soft hemp. This method procures great tenacity and flexibility with very little stretching of the belting.

Weighting Textile Fabrics.

Lancashire cotton manufacturers lie under the charge of weighting their cotton with clay and chemicals, and of being themselves responsible for some portion of the bad trade they experience by having sent out loaded goods of such worthless character as to scare away would be purchasers from English cloth, and to induce them to give preference to American fabrics. However true or untrue this may be, whether the local cotton trade suffers or not because of these practices, it is unquestionable that the silk trade is injured by the loading process; French and German weighted silks come into competition with British goods, and by reason of their adulteration beat them from the market. Buyers of foreign silk goods need to be warned of the fraud which is practised upon them, and a statement of the method of adulteration may serve to explain how it has come about that even high-priced silks have not proved so durable as was expected. A lady bought in London a black silk faille of French manufacture, paying for it 20s. a yard. In less than a month, "the fabric was completely disorganised," being "cut between the sleeve and bodice, although it had been worn only a few times." Examination showed that the warp of the material had been weighted up to 20oz. per pound, and the weft to 32oz.; and that the actual value of the fabric was about 5s. 4d. a yard. Fabrics of all shades of colour are similarly treated, the practice being carried on extensively at Lyons. The gentleman, who makes this exposure, expresses belief that the merchant and draper are ignorant of the extent to which weighting these "silk" goods is carried on and says that the fraud cannot be detected by them. In appearance, he says, the weighted are quite equal to the unweighted silks; and the technical skill and chemical knowledge of Continental dyers is devoted less to perfecting the colour than to increasing the weight and bulk of the silk entrusted to them. London receives from France not less than £9,000,000 worth annually of these loaded goods; and from one German town alone (Crefeld) they are sent to the value of £1,300,000 a year. Switzerland, too, is in at the swindle; and altogether the British purchaser pays out a very large sum every year for judiciously-manipulated chemicals. It is encouraging to know that the silk industry in the countries named is in a very bad way. Our own immaculateness in this "loading" business enables Lancashire to point the moral for France, Germany, and Switzerland: no doubt the frauds have largely contributed to bring the Continental manufacturers to their present troubles. To such an extremity are the Frenchmen reduced that, despite their avidity for "Protection," the silk manufacturers have been asking that the finer counts of English spun cotton yarns might be imported duty free, so as to aid them in meeting bad times and keeping their mills open. But the French spinners entered protest, and the benevolent intentions of the manufacturers who would serve the English market with "silk" goods were frustrated. It might be as well if the London buyers, who spend their millions annually in purchasing chemicals and Lancashire yarns as "silk" goods, were to give Macclesfield a turn, for its manufacturers can supply good silk.

Fires in Mills.

It is a well known fact in practical experience that the destructive mill fires do not reach their extent by reason of any lack of fire apparatus, but it is because such apparatus is out of order, or that those engaged in fighting the fire lack the wise, cool guidance of a proper leader. No set rules can be laid down for the organisation of a portion of the employes into a fire brigade, for the difference in the processes of manufacture and the consequent arrangement of buildings and machinery would modify any rules, but general principles hold good for all cases; and those are to practise selected men from among the employes in the use of the fire apparatus, starting and stopping the pumps, opening and shutting gates and hydrants, laying hose, &c. The most competent persons for such purposes are generally repair hands in a textile mill, and every establishment contains a suitable number of men upon whom reliance could safely be placed. The overseers should not be drafted into such an organisation, but remain in their rooms if possible during any fire. In cities, a number of the hands can be judiciously employed in keeping unauthorised persons from the premises during fires.



MACHINERY, TOOLS, &c.

Improvement in the Feed Boxes of Combing Machines.

A patent has recently been granted to Mr. E. G. Hattersley, manufacturer, of Mytholmes Mill, Haworth, and to Mr. S. Hird, manager of the same, for improvements in wool combing and preparing machinery, and for the manner in which the same operations are performed. The invention consists in a new or improved application of parts to all wool combing and preparing machines in which yielding draw rollers are used, by which the motion of the machine is automatically stopped, when, by accident or otherwise, the wool begins to warp the said draw roller, or after having passed through these rollers, it fails to follow the usual guide pieces into its proper receptacle. As the principle is the same whether applied to combing or preparing machines, we will describe it only in connection with the former, and there will be no difficulty in understanding how the same principle may be utilised in connection with the latter, such as first preparers, gill boxes, balling boxes, &c. In the class of machinery, commonly known as Lister's combing machine, and to which this invention has especial reference, the upper drawing-off roller is forced into contact with the lower drawing-off roller, (through which it receives its rotary power), by means of an adjustable spring which allows the necessary yield to the upper roller, to accommodate the different thicknesses of wool that must pass between the two rollers. To that part of the frame-work of the machine, which serves as guide for the yielding or upper drawing roller, and support for the adjustable spring, two levers are mounted on suitable bearings, one at each end of the yielding roller. One arm of each of these levers is made to come in contact with projections formed on the moveable bushes which carry the spring pressure to the arbour of the yielding rollers at each of its ends respectively. The other arms of these levers are separately (on one side directly, and on the other by the intervention of suitable parts) connected loosely to two of the three arms of another lever which is also mounted in bearings fixed to an appropriate part of the framework of the machine. The other arm of the last named lever extends outwardly sufficiently far to come in contact with the bent or inclined end of a suitably shaped spring, when this spring is held in a state of tension by a notched or recessed stand or guide which, together with the spring, is secured to the framework. From the foregoing description it will be seen that at each yielding movement of the yielding roller, caused by an extra amount of wool passing between the two rollers, as when the wool begins to warp, an upward motion must be given, through the medium of the lever connections, to the outer arm of the three armed lever, thus bringing it in contact with the bent or inclined end of the spring, mentioned as being held in a state of tension, which by the pressure of the said lever arm, is pushed beyond the notch or recess in the stand or guide and so set free to move to its reposing state. The latter part of this invention has reference to the stopping of the machine when the wool fails to follow its usual guide pieces into its proper receptacle; this is accomplished by the use of a suitably proportioned lever mounted in bearings on the framework. By the application of a spring or weight, one arm of this lever is made to press against the wool just before it enters the guide rollers which place it in its proper receptacle, but if the wool be either absent, or held loosely at this part, the arm of the lever, which should be held down by the wool, is set at liberty, and the spring or weight causes it to rise and to bring with it an adjustable finger which is fixedly attached to it. This finger, projecting underneath the outward arm of the three armed lever (before-mentioned), gives it the upward movement necessary to act upon the bent or inclined end of the spring, in the way, and for the purpose, we have before mentioned. We have described only one arrangement of parts by which the desired effect may be gained, but other appliances may be used, such as a simple lever of the "first order," one of its arms being in contact with both ends of the yielding roller, and the other striking the bent topped spring direct without the intervention of the supplementary lever and parts. Then again the lever which presses against the wool may be made, when liberated, to stop the machine direct; in this case, the two motions would act independently of each other, but for compactness and mechanical neatness it is preferable to use the parts as fully described. Again, as it is found in practice that the end of the yielding roller, in combing machines, nearest the belt guide bar is generally the one that is lifted when the wool wraps, the invention might have been applied to that end alone, but in this case, the result would not have been so effective. As the top draw roller in preparing machinery is made to yield in the same way as that already described in connection with combing machinery, and the guide pieces for the wool in both machines are similar, it will readily be understood that like results may be gained by a slight alteration in the size and the shape of the different levers and bearings used as before described, in order that they may fit the various forms of framework in the different machines.

Another improvement, patented by the above named inventors, is in reference to the construction of the feed boxes of Noble's combing machines, and has for its object the alleviation of the wear of the drawing-off leathers, and the facilitation of the combing of long-fibred wool, &c. It has been the practice to allow the lid of the feed boxes to press the wool incessantly during its passage through the same, and therefore much power has been required in this operation, as also, in pulling the wool through the circular comb; the drawing-off rollers requiring to be very firmly pressed together has entailed a great amount of wear on the drawing-off leathers, and has rendered the fibres in long wool very liable to breakages. To prevent this the inventors fix to the lower or loose end of the feed box lid a small projection overhanging the lower portion of the feed box, so that after

it has passed over the incline, which raises it at the usual places during its passage around the circular comb, and when it is lowered, to place the wool in the necessary position for combing, at the required depth, the projection on the feed box lid comes in contact with the framework of the comb's carriage, and thus prevents its further descent, but as the lower portion of the feed box continues to descend until it reaches the same stop piece, the pressure is taken off the wool so that it can be more easily combed; and the greater liberty given to the fibres reduces the liability to breakages. Other means can be employed to relieve the wool from the pressure of the feed box lid, as, for example, instead of fixing the projection to the lid, a small pin may be used which works loosely in a hole through the lower end of the feed box, or a projecting piece may be fixed to the opposite end of the lid, and made to come in contact with a supplementary incline, and so produce the desired result.

"Herculean" Leather for Belting, Picking Straps, &c.

Some samples of leather, in the preparing of which an entirely new departure has been taken, have been forwarded to us by Mr. Elliott Hallas, New Street, Huddersfield. They combine extraordinary strength with lightness and great suppleness, and are admirably adapted for belting, picking straps, &c. This leather is produced from the best Swiss ox-hides, specially prepared for the purpose, and is manipulated in the tanning process in such a manner that the above features are attained, and a durability is ensured much above the average of leather now in general use. Tests of a very satisfactory nature, as to the tensile strength, and wear and tear of the leather, have been made, and picking straps of this material are guaranteed to wear from three to four times as long as those ordinarily in use. Mr. Hallas is the sole maker of picking bands of this leather, the cost of which is moderate when taking into account its superiority in a practical sense.

Davenport's Improved Reeds for Woollens, Worsted Coatings, &c.

An improved reed is being produced by Mr. W. Davenport, Reed Maker, Crampton Street, Bradford, which will prove of considerable advantage to manufacturers of worsteds, woollens, &c. Instead of the ordinary flat wire, (too often left with a square edge) the reeds are made with dents of an oval or convex shape, being round in the middle, and gradually becoming thinner towards the edges. The difference between the middle and the extreme edge being about 4 numbers of the wire gauge. The advantages of this form of dent will be apparent. A stronger reed can be used, with less friction, than with an ordinary one with thin dent. They will weave "tender" warps with less difficulty, as the threads bear on the middle part of the dent only, that part which is perfectly smooth and highly polished. As a reed becomes worn by the shuttle, the edges of the dents are flattened or "burred," forming a sharp edge, which is often the cause of the ends being cut down in numbers. These reeds prevent this, as the middle of the dent, being most prominent, bears off the threads from the edges, and also allows more freedom for the passage of the knots in the warp. The reeds can be made with dents of Swedish iron, cast steel, or phosphor bronze.

An Improved Method of Manufacturing Turkey Carpet Imitations by Mechanical Means.

An invention has been patented relating to a process by which carpets, with similar patterns to those of Turkey carpets, can be manufactured in a much shorter time than by the ordinary process, and this without detriment to the solidity and durability of the fabrics, when compared with carpets having the pile tied on. The usual method of manufacturing these carpets is by tying each single thread of the pile to the back of the carpet; in this way an unlimited choice of colours can be made, while in velvet ones, woven by means of the jacquard loom, this is never the case, but on the other hand, the tying in of the pile threads is a wearisome operation, by which the prices of the said carpets are greatly enhanced. These imitation Turkey carpets are made in a mechanical way after patterns, in which squares of different colours indicate in what way the desired design is to be produced by the juxtaposition of accordingly coloured wool threads. Each transverse range of squares in the pattern answers to one shoot for the production of the pile of the carpet, this pile is formed by strips or narrow fringed ribbons of many coloured wools, which first are made by weaving the same, and then they are combined as a weft with any suitable binding chain, and in the succession indicated by the pattern. Therefore, the new process necessarily consists of two operations:—1st, the making of the narrow strips or ribbons of multicolour wool; and, 2nd, the forming of the pile by means of the said strips. To make the weft strips, one chain or warp is beamed per transverse range of the pattern, i.e. a chain of wool threads, presenting the same succession of colours as the squares in the respective transverse range of the patterns. The width of this multicolour wool chain must exactly correspond to the breadth of the carpet to be manufactured; usually the number of coloured wool threads in this chain is from 150 to 200 per meter, according to the quality of the carpet. When weaving one of the weft strips, a flat wooden rod, the breadth of which answers to the desired length of the pile to be obtained, is first introduced into the shed of the multicolour wool chain, then a few shoots of wool yarn (usually four shoots) are made, then one or two shoots of pack thread, again a few shoots of wool yarn, and finally, a second flat rod is placed into the shed. As many times as the enumerated weft can be passed, in the described succession, into the warp, as many identic strips or

ribbons, presenting the same succession of colours, can be made. After having removed from the loom the multicolour wool chain containing the described weft, the wool threads are cut through between each two juxtaposed flat wooden rods. In each strip or ribbon thus formed, the two series of wool yarn shoots are then sewed up, in order to prevent the multicolour chain threads from altering their positions, and to firmly connect the chain threads to the weft threads. Then the pack thread is drawn out, a space containing no weft being thus formed between the two sets of wool shoots, by said weftless middle portion of the warp threads in each strip the knots of the true Turkey carpets are imitated, and at the same time this portion makes visible the pattern on the backside of the carpet. The strips or ribbons obtained in this way of all the multicolour wool chains are numbered according to the succession of the transverse ranges of the pattern, and then they are successively shot into a warp consisting of pack thread or a similar strong material. The said warp or chain is hedded into the two leaves of an ordinary loom, the reed of this loom contains one thread per split, and the intervals between the splits are exactly as large as in the reeds used when manufacturing the fringed weft strips. The chain and weft are crossed as in common linen ware. At the beginning some few shots of wool yarn are shot in, and after, the first ribbon, having been attached by its ends to a lath of triangular section, to prevent it from shrinking, is so pushed into the shed of the warp that its front edge is placed higher than the back edge. By means of a brush the short threads fringing the ribbon are then erected in a position perpendicular to the surface of the fabric so as to form the pile. When the position of the two sets of warp threads, forming the shed or lash, is inverted, and the reed shocked against the lath, this latter is turned in such a manner that its back edge is raised above the front edge, this position allowing of the back edge's fringe, too, being erected by means of the brush. Finally, the ribbon is loosened from the lath which is withdrawn from the shed. In order to fill the warp with weft threads in the whole extension occupied on the surface by the diverging pile threads some shoots of strong wool yarn are interposed between each two fringed ribbons. In this manner the work proceeds until all the ribbons are woven in, when again a few shoots of wool yarn are employed to terminate the carpet. The carpet thus manufactured is dressed and finished in the usual manner by steaming, beating, brushing and shearing.



Mordants.

Comparatively few colouring matters have the power of fixing themselves upon surfaces and fibres, whether animal or vegetable, without aid from substances called mordants, and when they are applied alone, the shades are dull and fugitive, more like a stain than a dye, and those few which can attach themselves without the help of mordants generally become brighter and more permanent by their use. The theory of mordants is as follows:—The mordant or some constituent part of it fixes itself to the animal or vegetable fibre, and changes it so much that the colouring matter has now the power to attach itself in such proportion as to give a dull body of colour with some degree of permanency. A combination of qualities is necessary to constitute a good mordant. It must have a strong affinity for both the fibre and the colour, and combine readily and permanently with both. But this tendency to combination must not be too strong, for if it combine, whether of its own nature or by the help of a mordant, too eagerly with the fibre, the result will be unevenness in the colouring, the portions of the materials entering the dye-pan the first, or being the most easily acted upon, will be sure to receive more than their fair share, and consequently the remaining parts less. If the mordant has an affinity very much stronger for the colour than for the fibre, a "lake" or coloured precipitate will be formed, this falls, not upon the fibres, but to the bottom of the dye-pan, and the goods are left scantily and loosely covered in spite of the quantity of material that has been used. Again, if the affinity between mordant, fibre and colour take place too readily, the shade dyed, even if it be free from clouds and spots, does not enter the pores, but is liable to lie loosely on the surface of the fibre, so as to be easily rubbed off, and the colour will be either harsh or dull. Then, again, the mordant in the state in which it is used, must have no destructive power upon the fibre. If it be either too strongly acid, or too strongly alkaline, it will have an injurious effect upon the texture of the goods, rendering them tender. It is also necessary that a mordant should not deaden the brilliancy of the fibre, but rather brighten

it. Neither must a mordant alter the colour of the fibre; if this is the case, if, like salts of iron and copper, it possesses any tinctorial power, its use must be limited to one special class of colours. Mordants, with a few exceptions, must be soluble, so that that they may come into contact with fibre and colour in a liquid form, but they must be capable of assuming an insoluble condition when the combination is effected, otherwise mordant and colour would be easily removed by washing. This conversion from solubility to insolubility is effected in a variety of ways. Sometimes the insoluble condition is the result of the escape of a volatile acid. Thus, if cotton is mordanted with red liquor (acetate of alumina), and allowed to dry, the acetic acid passes off, and the alumina remains in an insoluble state on the fibre. Sometimes decomposition of the mordant takes place simply by its contact with the material, the acid remaining in solution, whilst the base or a subsalt becomes attached to the fibre. This is frequently the case when a dilute solution of tin crystals or nitrate of iron is the mordant. Sometimes it is the result of new combinations being made, thus a mordant and a colour, each soluble when taken separately, become insoluble when combined; and lastly, a mordant may be rendered insoluble upon the fibre by being treated previously with some suitable chemical agent. Thus, if cotton yarn has been passed through aluminate of soda, and is then entered into a solution of muriate of ammonia or chloride of ammonium, the alumina remains on the fibre in an insoluble condition, and in the same way if cottons or delaines are mordanted, for printing in the steam style, by stannate of soda, and are afterwards put into a weak solution of sulphuric acid, the former combines with the latter and is removed, stannic acid, *i.e.* peroxide of tin, remaining on the fibre. From these considerations it will be readily understood that only such substances as are unstable in their constitution are capable of acting as mordants as their constituent parts must admit of easy decomposition. The acid and the base must be held together by a very feeble affinity, and must be evenly balanced, for if there is an excess of acid the mordant may have little or no action except in injuring the material; such mordants are said to be too raw; but if the mordant be too "dead" (*i.e.* if the acid has been made to take up too much base), it works unevenly, and the colours will be loose and generally dull. Many of the most improved mordants, if kept too long, or if mixed with a large quantity of water, especially hot, undergo spontaneous decomposition, similar to that which occurs when they are brought into contact with organic fibres. It is advisable that all mordants be kept at a uniform temperature, and be protected from the action of light. Some acids yield the base most readily to wool and others to cotton. Tin or iron dissolved in nitric acid is more readily deposited upon cotton than if hydrochloric acid were the solvent, as the latter is more disposed to deliver its base to wool, therefore if a piece of delaine be placed in water containing nitrate of iron, the cotton will be rendered buff by oxide of iron, but if, instead of the nitrate, muriate of iron be used, the worsted will be coloured, whilst the cotton warp remains almost colourless. One reason for the different behaviour of the two salts is that the nitrate of iron is a much less stable compound than the muriate. Cotton is generally dyed or mordanted cold, it is, therefore, able to take the base from the nitric acid, although it is unable to overcome the more powerful affinity of the muriatic, but wool and worsted having the advantage of being dyed hot, can take the base from the muriatic acid. The matter deposited on the fibre is, as a rule, not merely an oxide of tin, or of iron, &c., as the case may be, but a subsalt, containing a portion of the acid which was present. Thus the colours respectively produced upon the wool, when boiled with logwood and the sulphate or the muriate of tin, are not alike, the result from the former being a redder shade than that from the latter. Mordants are applied either with the colouring matters, before them or after them. For wool dyeing, as a rule, the first is the method adopted, and for cotton, the second plan is employed. The chief mordants of the mineral kingdom are alumina, antimony, tin, copper, iron, chrome, lead, arsenic, bismuth, cobalt, manganese, nickel, mercury, zinc, tungsten, magnesia, silica, sulphur, and metallic sulphurets are sometimes used. Salts of soda, such as the hyposulphite, borate and silicate with certain artificial colours are also used as mordants.

(To be continued.)

Softening Leather.

Neatsfoot oil will not soften leather under all circumstances, neither is castor oil any better. Oil is not necessary to the pliability of the leather—the leather of the ox, goat, calf and kid. It is necessary that the leather be kept moist; but oil need not be the moistening means. Yet in use oil is the most convenient means for keeping leather soft. It would be inconvenient to employ water to keep pliable the leather of our boots, because of its spreading the pores of the leather and admitting cold air; besides, unless always wet, leather becomes hard and rigid. Oil on the contrary, keeps the leather in the proper state for its best usefulness, that of pliability. But, in order that oil may soften the leather, its way should be prepared by a thorough wetting of the leather by water. Much less oil is required if the leather is well saturated with water. The philosophy is obvious; water is repellant to the oil, and prevents it from passing entirely through the leather, holding the oil in the substance of the leather. The use of water for softening belts in factories is not inconvenient, if advantage is taken of a holiday. At night the belts may be brushed clean and thoroughly wetted, then in the morning the oil may be used; a much smaller quantity is necessary to render the belt pliable than when no water is used.—*Sci. Am.*

ODDS AND ENDS.

M. Maury, Jun., has obtained a French patent for the new wool oil, Oleat-Maury, which is a combination of pure mineral and vegetable oils soaped with alkalic carbonates. As this oil does not absorb oxygen, the wool will never become pitchy. It is preferable to oleine, no traces of sulphuric acid being detectable. The degreasing of wool is done in warm water of 40 to 50° R.

The question of the best mode of preserving steam boilers, which are temporarily "laid up," has for some time past received the attention of French engineers, and extensive experiments have been made with a view to obtaining reliable data on the subject. After trying painting the inside and outside, thorough drying, etc., the conclusions arrived at are summed up in the following recommendation: "A steam boiler which is to be put out of use for a time should be thoroughly cleaned, and instead of drying, should be filled quite full of water."

Carl Seeber of Schroppheim is the author of an improved process for dyeing carded or spun cotton turkey red. The articles are first put in a boiling solution of soda ash and resin, about 5 kilos of ash and 2.5 kilos of resin to 50 kilos of cotton. They are submitted to the action of a greenish oil composed of 5 kilos of prepared turkey red oil, 45 litres or water, 375 grains of stannate of soda, and 125 grains of liquid ammonia for each 50 kilos of cotton. They are next put in an alum mordant prepared as follows: For each 300 kilos of cotton, about 50 kilos of sulphate of aluminium, 25 kilos of soda crystals, 10 kilos of epsom salts, and 5 litres of acetic acid. The articles are then soaked in a bath of chalk. M. Seeber claims that the process saves 100 per cent. in time, and has, besides, many advantages over other systems.

The amount of power wasted by shafting being out of line, badly lubricated, of insufficient size and imperfectly coupled, can hardly be estimated. Great as is this loss, that from badly laced, crooked, stiff, and generally outrageous belting, is but little less. In some establishments a belt lacing, of sufficient size for the main belt of the establishment, is considered plenty good enough to lace a three-inch belt, and is used accordingly. A punch, large enough to make holes for the biggest lacings is, of course, necessary, and it has the advantage of answering for all sizes of belts. The apparent advantage of having but one size in a large establishment is captivating to the business department. The result in belt efficiency, however, is something which would astonish the counting house if it could be made to understand the figures.

According to the *Revue Industrielle* a Commissioner has lately been appointed by the Société Industrielle de France with the object of inquiring into the feasibility of shortening the daily hours of labour in the textile and collateral industries. At present the hours throughout France are rarely, if ever, under 12 per day, while in Germany they are still longer, being 13 at Dusseldorf, 13 to 15 at Treves and Aix-la-Chapelle, and even 16 in Franconia—this, too, without deductions for Sundays and holidays. After mature consideration, however, the committee have come to the determination that it is impossible to recommend the reduction in face of the great competition from England and Germany. Moreover, if the hours were shortened, the already moderate daily wages would have to be reduced, much against the workpeople's wish; and it is also considered that the latter would suffer considerably, both morally and pecuniarily, from the extra idle time, a great portion of which would be passed in the *débit de boisson*.

THE GAZETTE.

Adjudications of Bankruptcy.

Frankland, D., B. Pilling, and E. Wilkinson, Green Bridge Mill, Padiham, Lancashire, cotton manufacturers.
Miller, J. R., 57, Wilford Road, Nottingham, lace manufacturer.
Sidley, J. W., and P. H. Kraft, Barker Gate, Nottingham, frilling manufacturers.
Trigg, J., and R. Stagg, 58, Friday Street, London, carpet warehousemen.

Dividends.

Baggallay, J., T. W. Baggallay, and R. Spence, 14, New Bridge Street, Blackfriars, London, warehousemen, 15s., Chief Official Receiver's Office, 33, Carey Street, Lincoln's Inn.
Parsons, A., 1, Needless Alley, Birmingham, Manchester warehouseman, 3s. 3d. (first and final), offices of the trustee, Mr. Samuel Hunt, 21, Nicholas Street, Manchester.
Blakeley, A., Royds Mill, Ossett, Yorkshire, cloth manufacturer, 2s. 4d., offices of John Routh and Co., 6, Commercial Buildings, Park Row, Leeds.
Bowes, J. and J. Silverwood, Lion Arcade, Huddersfield, woollen manufacturers, 1s. 5½d. (second and final), offices of Armitage, Clough and Co., 23, John William Street, Huddersfield (Separate estate of James Bowes, 3s. 4d., and Joseph Silverwood, 4s. 9d.)
Holt, J., E. Sheard, T. Heptworth and G. Oates (trading as Holt, Sheard and Hepworth), Victoria Mills, Savile Town, Thornhill, Yorkshire, woollen manufacturers, 5s. 1½d., Fred Carter, accountant, Bond Street, Dewsbury. (Separate estates of Thomas Hepworth, 3s. 9d., and George Oates, 9s. 3½d.)

Bills of Sale.

	£	s.	d.
Derrfeldt, C., 62, Dunlace Road, Lower Clapton, ladies' underclothing manufacturer	35	0	0
Davies, J. M., Llanstephan, Carmarthenshire, woollen manufacturer	82	17	9
Jakobowski, Fanny, 62, St. Paul's Road, Canonbury, widow, Helena B. Winternitz, Canonbury, lace manufacturer, and E. Jakobowski, St. Paul's Road, Canonbury, music composer	134	18	0
Whitehead, R., New Hey, near Rochdale, woollen printers	60	0	0

Dissolutions of Partnership.

Bainbridge, W., and R. Ironmonger, Long Eaton, Derbyshire, lace manufacturers.
Holdsworth, J. H., and W. Fish, St. Sepulchre Gate, Doncaster, stuff dealers.
Jeremiah, jun., and F. Tattersfield, Kilpinhill, Heckmondwike, Yorkshire, blanket manufacturers.
Stott, R., J. Stott, and J. Potter, Paradise Mills, Oldham, Lancashire, cotton spinners.
Tanzer, W., and J. H. Newton, 9, King John's Chambers, Nottingham, lace manufacturers.
Boycott, W. H., and W. James, Manchester, manufacturers of coloured goods.

PATENTS.

Applications for Letters Patent.

Applying drag to the bobbins, pirns or spools on frames for spinning or twisting fibrous materials and apparatus therefor. W. J. Adeley, Belfast.	25th Mar. 3,831
Beaming frames. J. Lord, J. Whitaker, and H. Haworth, London.	2nd Mar. 2,757
Blue and violet colouring matters. H. J. Haddan, London.	10th Mar. 3,149
Bobbins. W. R. Cant and H. Adam, London.	11th Mar. 3,189
Belt protector for driving belts of machinery. J. Jackson, Glossop.	23rd Mar. 3,690
Bleaching cotton yarns and fabrics. W. Mather, London.	23rd Mar. 3,748
Carding engines. G. Riedel, Hof, Germany.	28th Feb. 2,700
Cloth cutting and edge paring. W. Beecroft, London.	2nd Mar. 2,763
Combing and clipping the fringes of doyleys, towels, &c. John Brown, Belfast.	5th Mar. 2,908
Connecting the ends of driving belts and bands. G. Williamson and J. Jackson, Manchester.	9th Mar. 3,051
Carding engines, J. Thompson and T. Barker, Manchester.	11th Mar. 3,161
Cutting hair, wool, or other substance. W. Bown and G. Capewell, London.	11th Mar. 3,207
Construction and fitting of flanges for looms, beam warping mills, &c. T. Reeder, Preston.	18th Mar. 3,491
Carriages for bobbin, net, or twist-lace machines. G. H. Bates, London.	20th Mar. 3,601
Cutting fustian, velvet, &c. J. P. Jones, Liverpool.	20th Mar. 3,627

Carding engines. T. Smart, Stroud.	21st Mar. 3,636
Colouring matters. H. J. Haddan, London.	24th Mar. 3,803
Carding and scribbling cotton, wool, &c. C. Rhodes, Halifax.	25th Mar. 3,819
Cutting chenille. J. McGee, Glasgow.	25th Mar. 3,825
Chromates and bichromates. J. J. Hood, London.	26th Mar. 3,895
Driving, brake, picking, stop-rod, weft fork and treading motions, and the construction of shuttle-boxes of looms. R. L. Hattersley and J. Hill, Keighley.	6th Mar. 2,954
Dyeing hosiery and other like goods, and apparatus therefor. J. H. Ashwell, Liverpool.	12th Mar. 3,219
Device for removing the roving from the drawing rollers on the yarn breaking. P. Jensen, London.	16th Mar. 3,411
Dupe healds employed in weaving figured and plain gauze and lenos. S. Butterfield, Halifax.	19th Mar. 3,545
Driving the spindles of machinery for spinning and twisting fibres. W. and S. Blackburn, Halifax.	20th Mar. 3,605
Driving the spindles of machinery for spinning and twisting fibres. W. and S. Blackburn, Halifax.	20th Mar. 3,606
Extending or stretching woven fabrics. J. and E. and T. O. Arnfield, Manchester.	27th Feb. 2,654
Embroidering machinery. T. Wright, Glasgow.	5th Mar. 2,898
Effecting the drag and smoothing the fibres of yarn in roving, spinning and twisting. W. S. Clapham, London.	10th Mar. 3,124
Fustian cutting frame made of wrought iron tubing. H. Beresford, London.	18th Mar. 3,487
Finish in colours on waterproof fabrics. P. Frankenstein, Manchester.	21st Mar. 3,632
Guiding, straightening and evening fabrics. H. J. Allison, London.	17th Mar. 3,434
Hollow fire bars of steam boilers, &c. E. Swindells, Manchester.	20th Mar. 3,580
Healds, heddles and analogous articles composing harness of looms. B. J. B. Mills, London.	23rd Mar. 3,734
Improved arrangement for driving bands for roller mills. E. Mechwart, London.	25th Mar. 3,847
Improvement connected with dobbies or jacquards of looms for operating the healds. J. Hollingworth, Halifax.	19th Mar. 3,543
Invention to supersede the use of oil, grease, &c. J. H. Salter and T. A. Burrows, Oxford.	25th Mar. 3,827
"Jerrys" or perpetual cutting machine. J. W. and F. W. Taylor, Manchester.	3rd Mar. 2,784
Lubricators. W. A. Barlow, London.	28th Feb. 2,737
Loom shuttles, pickers and bobbins. H. H. Lake, London.	14th Mar. 3,352
Machines for opening and bossing the bobbins used in lace machinery. E. Whitehall, London.	27th Feb. 2,673
Metal bobbins and spools for spinning, twisting, roving, and winding machinery. J. C. Rouse, Halifax.	2nd Mar. 2,745
Machines for stiffening cloth in finishing, part of which is applicable to other purposes. A. Whowell, London.	2nd Mar. 2,756
Means or apparatus for manufacture of fabrics for over-coatings, shirtings, &c. J. Broadhead, London.	5th Mar. 2,922
Mules and twiners for spinning and doubling textile fibres. J. Clegg, Manchester.	16th Mar. 3,363
Metallic etching for producing designs in relief. A. Piper, Wolverhampton.	17th Mar. 3,419
Manufacture of circular fabric and apparatus therefor. G. Blunt and W. M. Richards, London.	19th Mar. 3,555
Metal or alloy for embroidery, &c., purposes. J. H. Hollinghurst, London.	19th Mar. 3,560
Novel application to fabrics in imitation of beads. W. E. Gedge, London.	2nd Mar. 2,766
Novel card lacing machine. H. Vieth, London.	16th Mar. 3,390
Operating the box tappets of box looms and apparatus for gradually lowering the shuttle boxes. H. R. Middlemost, G. Hirst and R. Ramsden, Halifax.	12th Mar. 3,214
Operating the picking stick employed in looms for weaving. J. Crosland, Halifax.	16th Mar. 3,365
Oiling the bearings of revolving shafts. W. Butterworth and H. Shawcross, Rochdale.	23rd Mar. 3,693
Preparing coloured or dyed yarn for filling or winding for use in weaving. A. G. Brookes, London.	3rd Mar. 2,800
Preparing wool, &c., for spinning. J. C. Mewburn, London.	11th Mar. 3,197
Picker sticks for looms. E. Petterson, London.	17th Mar. 3,437
Pressing and tentering woollen and other woven and felted fabrics. G. H. Nussey and W. B. Leachman, London.	17th Mar. 3,450
Picking motions of looms. R. Eckroyd and J. Bentley, London.	19th Mar. 3,573
Pile fabrics and machinery therefor. J. Sullivan, Manchester.	21st Mar. 3,638
Preparing cotton and other fibres for spinning. J. Macqueen, Manchester.	23rd Mar. 3,699
Preparing flax, hemp, &c. J. V. Eves, Belfast.	26th Mar. 3,863
Roving-frames for treating flax, hemp, &c. T. Craister, Leeds.	11th Mar. 3,159
Revolving flat cards employed in carding cotton, &c. S. Ryder, Halifax.	13th Mar. 3,269

Reeling and winding frames. W. Noton, Manchester	16th Mar. 3,361
Ring spinning frames and spindles. H. J. Allison, London.	18th Mar. 3,561
Separating the bark from the other portions of flax, hemp, and similar plants. W. R. Lake, London.	11th Mar. 3,203
Sectional warping and beaming machines. J. Bethel, Manchester.	12th Mar. 3,220
Shuttle-guards. S. Walker and G. Leek, Manchester.	12th Mar. 3,224
Stretching woven fabrics. W. Birch, Manchester.	16th Mar. 3,360
Singeing "nap, fly, fluff," and other imperfections from cloth, &c. W. Banks, London.	16th Mar. 3,385
Spindle-bearings of spinning, doubling and winding machines. L. H. Kraft, London.	17th Mar. 3,451
Spindles and flyers. J. S. D. and J. Shanks, Belfast.	18th Mar. 3,486
Shafts, axles, spindles, piston and other rods. P. M. Parsons, Liverpool.	20th Mar. 3,624
Thread winding machines. J. Booth and J. T. Wibberley, London.	2nd Mar. 2,750
Taking-up motion for looms. W. Gibson and J. Harling, Halifax.	4th Mar. 2,841
Taking-up and letting-off motions of looms. T. H. Blamires, Halifax.	6th Mar. 2,946
Treble springed shuttle tongue or peg. J. Cross, Oldham.	6th Mar. 2,957
Treating dry absorbent bodies, such as paper, fabrics, fibres, &c., for the manufacture of material suitable for various useful purposes. E. P. Louvot, London.	6th Mar. 2,979
Turfing fabrics. M. F. Connell, jun., and H. B. Buck, London.	21st Mar. 3,655
Transmitting power by ropes or bands and apparatus therefor. J. H. Ratcliffe, Manchester.	23rd Mar. 3,704
Taking-up motion for looms. E. Barlow, Manchester.	26th Mar. 3,864
Winding yarn. A. G. Brooks, London.	3rd Mar. 2,800
Warp letting-off motion for looms. D. Greenhalgh, Halifax.	9th Mar. 3,041
Woven belting for driving machinery, &c. J. Taylor, Manchester.	12th Mar. 3,222
Weighing machines for the feed apparatus of carding or other machines. J. C. Mewburn, London.	18th Mar. 3,504
Washing, oiling and drying wool. T. Speight and H. W. Whitehead, London.	18th Mar. 3,506
Warp lace machines. J. C. Johnson, London.	24th Mar. 3,788
Winding machines. W. H. Hayhurst, and T. L. Jones, Blackburn.	26th Mar. 3,861
Yarn clearers. T. Bowlas and J. Barratt, Manchester.	4th Mar. 2,845

Patents Sealed.

1,040	1,300	2,410	3,630	4,018	4,694	4,707
5,432	5,910	987	1,270	4,449	4,501	4,839
5,404	14,665	1,326	4,848	5,207	5,948	15,853
3,673	4,687	4,742	4,756	4,806	4,845	5,021
5,103	8,480	8,509	6,454	16,039	932	1,110
1,111	2,426	4,975	5,035	5,160	5,640	6,967
12,257	13,208	14,659	15,537	15,747	3,446	4,469
4,908	4,994	5,084	5,110	5,114	5,123	5,268
5,292	5,458	5,459	5,597	6,882	16,103	4,195
4,415	4,541	4,675	4,899	5,038	5,317	16,390
16,483						

Complete Specifications Accepted.

4,276	7,210	7,511	8,129	1,274	1,392	5,710
6,078	6,534	7,760	7,791	7,798	7,815	7,830
7,909	9,515	5,887	6,186	7,103	7,697	7,786
7,823	7,858	7,859	7,938	16,590	16,843	1,154
1,743	5,790	7,168	7,757	8,145	8,156	8,192
8,280	8,308	8,319	8,882	14,640	16,472	815
1,280	1,807	1,912	1,914	1,941	7,941	8,012
8,302	8,387	8,389	8,424	8,446	8,479	8,557
8,649	8,744	9,625	1,200	8,514	8,607	8,642
8,727	8,909	12,894	2,217	2,314	8,560	8,606
8,647	8,762	8,847	8,893	9,039	9,772	13,512
2,397	2,428	8,155	8,733	8,806	8,895	596

Provisional Specifications Accepted.

1,625	1,671	1,687	1,910	1,929	15,654	467
783	1,250	1,323	1,324	1,984	1,993	2,370
10,577	14,481	860	1,005	1,069	1,409	1,727
1,750	1,759	2,050	2,075	2,091	2,140	2,369
2,380	2,556	1,618	2,245	2,256	2,311	2,382
2,580	14,574	1,255	1,371	1,649	1,720	1,649
1,720	1,728	2,308	2,416	2,417	2,421	2,427
2,534	2,603	2,608	2,654	2,737	65	1,931
2,467	2,545	2,599	2,602	2,611	2,673	2,745
2,841	2,922	2,928	2,946	2,182	2,763	2,766
3,041	3,042	913	1,062	2,114	2,281	2,381
2,117	3,203	3,214	3,224			

The Journal of Fabrics

AND

Textile Industries.

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Notices.

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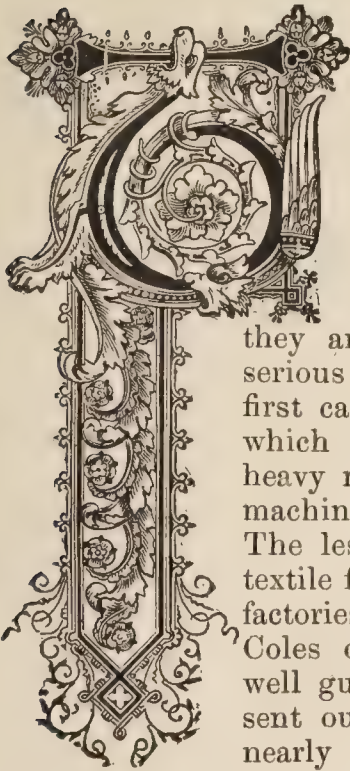
To prevent any misunderstanding, all Articles sent to the *Journal of Fabrics and Textile Industries* for publication will be considered as offered *gratuitously*, unless it is stated explicitly that remuneration is expected.

Readers are invited to forward items of interest to the Trades concerned.

The Proprietors will feel greatly obliged if any of their readers, in making enquiries of, or opening accounts with, Advertisers in this paper, will kindly mention the *Journal of Fabrics and Textile Industries* as the source from whence they obtained their information.



Factories and Workshops.



HE report for 1884 of the Chief Inspector of Factories and Workshops (Mr. Alexander Redgrave), to the Home Secretary, was issued recently as a Blue Book. It appears that, by means now adopted and described in the report, a very thorough knowledge is obtained of the causes of accidents in factories, and the kind of machinery from which they arise. Mr. Redgrave states that more serious accidents occur in the factories which first came under inspection in 1867, those in which are found ponderous machinery and heavy materials—as, for instance, iron mills, machine makers, chemical works, and the like. The less severe, but more frequent, occur in textile fabrics, cotton, worsted, woollen, and flax factories. This, Mr. Superintendent Inspector Coles observes, ought not to be, seeing how well guarded in all respects machinery is now sent out by the makers. The truth is that nearly one-half of the accidents which take place arise from women and young persons cleaning the machinery when it is in motion. Children are prohibited from doing this by Section 9 of the Factory and Workshop Act, and Inspector Coles suggests that this prohibition should be extended, at least, to all young persons under 18 years of age. A great number of accidents, too, are caused by the eagerness of

the work-people to finish their work, as being on piece work they are reluctant to lose any time by stopping the machinery. While the inspectors generally acknowledge that much has been done, with the concurrence of the occupiers of factories, to diminish preventable accidents by fencing dangerous machinery, and by other expedients, the Chief Inspector remarks that a similar spirit does not animate all employers. Strong objections are sometimes made to the adoption of simple precautions for the prevention of accidents, and nothing but severe measures can induce some employers, and even millwrights and machine makers, to acknowledge the necessity of greater precautions being taken. In a worsted and woollen district, H.M. Inspector Cullen points out, as the cause of a great number of accidents, the eagerness of the workpeople to finish their work, actuated by much the same motive as that mentioned by Mr. Coles. He says: "There is a great deal of woollen machinery of the old type, to which, during the past 16 months, I have paid special attention. Warned by several unfortunate calamities, I have, under your directions, required 'strap guides' for the driving belts on every fast-and-loose pulley, and covers for the ingathering gearing wheels at the ends of mules, so constantly found unfenced, and the cause of the loss of many a hand. I have been unable as yet to revisit and examine every case, but have the written engagements of nearly 200 employers that these safeguards are, or as soon as practicable, will be fitted. A difficulty to be contended with is the prejudice and foolhardiness of too many of the workpeople, who remove or destroy the precautions adopted for their safety to save a little time and trouble. In many instances, I have found strap guides broken off, and the metal covers for toothed gearing wheels a heap of rusty iron in a corner. Another fruitful source of accident, which is beyond our control, is that it is the custom in this district for the workers to be allowed to leave early on a Saturday, provided their task of cleaning machinery is finished." Her Majesty's Inspector, Captain Smith, who has charge of Sheffield and the neighbourhood, where there are large and most important iron and other works, has brought to the Chief Inspector's notice instances of objections to fence dangerous machinery. The Chief Inspector says: "In my last report I stated that I hoped to be able to come to some definite action with respect to the sad accidents which are caused by shuttles flying from looms. I was able to report that shuttle guards were applied in some form or other almost universally in Ireland, and that from the speed of the looms being less in Scotland than in England there were but few accidents from shuttles in those countries. Such accidents, however, continue to occur in Lancashire and Yorkshire. It appears to have been assumed that it was only natural for shuttles to fly from looms, and that an accident from such a cause was a part of the incidents of work in a factory. There is, however, this peculiarity with respect to shuttles flying from looms—that they are not caused, as a rule, to the weaver in front of the loom at his work, but to some person, it may be himself, at the side of the loom. It is stated that shuttles will not fly from looms of the best make, and in thoroughly good order. This question of the serious danger, which is caused by reason of shuttles flying from looms, has at length reached a point of considerable importance to manufacturers, from a recent decision of a court of law placing a heavy responsibility on employers who do not take some of the known means for preventing accidents. When urging the adoption of shuttle-guards, the inspectors have been constantly met with the assertion that none of them do prevent the shuttle from flying from the loom. This we are bound to admit, but at the same time the shuttle can be prevented from rising, and eyesight is preserved from danger. There are several excellent shuttle-guards in action in the Technical College at Bradford. The whole of the looms in the extensive and admirable factory of Messrs. Shaw, of Stainland, near Halifax, are fitted with shuttle-guards, and they are very effectual in preventing accidents. Closely allied to the prevention of accidents is the securing a healthy atmosphere in factories and workshops by rendering innocuous dust, gases, &c., evolved in the various processes of manufacture, and by prohibiting the overcrowding of work-rooms. In a great number of occupations—I may say in the large majority of them—the inhalation of dust does not produce an immediately injurious effect, and consequently illness and suffering cannot always be traced directly to an unhealthy

occupation; but in one locality a special form of disease is intimately connected with one special occupation. The locality is Bradford, Yorkshire, and the occupation that of wool-sorting. A few years since, the wool-sorters' disease was manifested in several fatal instances. A conference was held in Bradford, and regulations were laid down which appear to be well calculated to prevent such contact with material likely to be injurious as would expose the operative to infection; it is to be observed, however, that the carrying out of these regulations is voluntary."



British Textile Institute.

FOR some time correspondence has been taking place in the various Textile Journals as to the desirability of establishing a British Textile Institute, and considerable difference of opinion has existed and been expressed by those connected with the trade upon the matter. As the outcome of this correspondence, a meeting, convened by circular, was held on the 19th January last, at the Bradford Technical College, to consider the matter. The meeting, though not large, was representative, including gentlemen engaged in the Woollen, Cotton, Worsted, and Carpet Trades, as well as representatives of Technical Journals. A general outline of the principles upon which such an Institute should be founded, and which had been drafted by Mr. B. H. Thwaite, was read, and a discussion ensued thereon. As might be expected, in originating a movement of this kind, various opinions were expressed; but most of the gentlemen present, although admitting the force of the arguments against, were favourable to the formation of such an Institute, and as an outcome of the discussion a Provisional Committee was formed. Since their appointment the Committee have had several meetings, and have discussed the question very fully, *pro.* and *con.*, with the result that they have decided that it is desirable to form the Institute, and recommend that the following Constitution and Rules should form a basis upon which the Institute should be founded. During the discussions of the Committee—and it has also been found in private conversation of the various members with gentlemen engaged in the trade—it has appeared that the greatest objection to, and difficulty in, establishing an Institute, such as that suggested, lies in the fear of the disclosure of matters which may be properly described as "Trade Secrets," or matters pertaining to a special branch of the industry. That such a fear should exist cannot be a matter of astonishment in one sense, but on the other hand it should be equally clear to all engaged in the trade, that there are a sufficient number of questions of general interest, and which can possess no personal value, which could be well brought before the members of the Institute to the benefit of all, and the discussion of which must prove of great value to the Textile trade generally, and to the country at large. It could be no benefit to the general trade for one member who happens to be engaged in one special branch to disclose that which pertains to his own branch of business in particular; whereas it could be no material loss to anyone to treat of general principles which might benefit all branches, without in any degree injuring one. There can be no doubt that the great advances which have been made in all our great scientific industries have been due in great measure to the free exchange of views which has taken place through the medium of the various Societies and Institutes connected with them. Such, for instance, as the Society of Chemical Industry. The Iron and Steel Institute. The Institute of British Architects, and many others which might be named. Then the question arises why should the Textile trade not be benefitted in a like degree. One of the necessary elements of success in such an Institute is that it shall be National, because there are many questions which could, and should, be discussed, common to all branches of the Textile trade, and which possess as much interest for those engaged in the Linen as the Woollen, or for those engaged in the Silk as the Worsted or Cotton manufacture. And the fact that there are questions which possess equal interest for those engaged in such widely differing branches of the industry is clear proof, not only that such an Institute is desirable so that these questions can be fully ventilated, but that in dealing with the questions that come before it, there can be no fear of the disclosure of "Trade Secrets," or matters which pertain to one branch of industry only. In fact, it would, and of necessity should, be the aim of the Institute to discourage the discussion of any question which possessed interest for only a very limited number of its members, and at the same time to encourage all that would be of interest to all branches of the trade. Another question, which has raised some doubt in the minds of many, is whether the establishment of such an Institute would not in some measure come in conflict with the Chambers of Commerce, and with Trade Societies. A glance at the Rules and Constitutions will at once show that it could not in any degree conflict with either one or the other. The papers and discussions of the Institute would be strictly confined to questions of a purely Technical and Scientific character, and no question of a purely trade or commercial character could properly come within its scope. True, there may be such questions as Commercial Geography, which could be very properly discussed at its meetings, but pure trade or fiscal matters would be of necessity beyond its scope. As a supplement to the recently established Technical Schools, such an institute must prove of the utmost value. There are many questions, which are of the greatest importance, which cannot possibly be dealt with in the classes of such schools, yet which could be well discussed at the meetings of the

institute, and the elucidation of which would be of the utmost value, both to the students in the schools, and to the trade generally, so that instead of there being conflict between the institute and the schools, they would be of the utmost value to each other. One taking up the work where the other leaves off, or one supplementing the other. Mr. Ashenhurst, of the Bradford Technical College, will supply any information as to rules, &c., or receive applications for election.

PROPOSED CONSTITUTION AND RULES.

That the Association be named the Textile Institute of Great Britain and Ireland.

The Textile Institute is established for the general advancement of the textile and allied industries, for the promotion of scientific and technical knowledge amongst those engaged in the manufacture and finishing of textile fabrics, by affording a means of communication between members of the textile trades upon matters connected with the art of textile manufacturing, by the bestowal of rewards for discoveries, inventions and improvements; and for original papers bearing on the processes embraced in the manufacture of textile fabrics from the cultivation of the raw material up to its final treatment as a textile marketable commodity. To arrange periodical meetings for the purpose of discussing technical and scientific subjects bearing upon the art of textile manufacturing, including all questions connected with wages and trade regulations. To appoint a committee of experts. (a.) In connection with the Central Council. (b.) In connection with the local branches, to whom technical and scientific questions bearing upon trade disputes and difficulties may be submitted, and generally to assist in the settlement of questions when high skill and knowledge is required.

That the Textile Institute shall consist of Honorary Fellows, Fellows, Associates, and Students, who shall have one of the following qualifications:—*Honorary Fellows* shall be either distinguished individuals who, from their position, are enabled to render parliamentary or other assistance in the development of textile manufacture, or be eminent for scientific or artistic attainments, or for exceptional experience. The number of honorary fellows not to exceed 25.—*Fellows*: Persons engaged in any of the processes involved in the manufacture of textile fabrics, who shall not have less than six years' experience, and shall be above the age of 26 years.—*Associates*: Persons engaged in the engineering, chemical, designing, educational, and mercantile professions, or in other allied industries, who shall be qualified by their attainments and position to aid in the technical or scientific advancement of textile manufacture.—*Students*: Persons who shall be students in the textile departments of the technical schools, or who are apprentices to the textile trades, who shall not be less than 18 years of age, nor more than 26 years of age.

The subscription of each fellow and associate shall be one guinea per annum, without entrance fee; for the first 500 elected; two guineas per annum for the second 500 members; and after the enrolment of 1,000, it shall be two guineas per annum, with an entrance fee of five guineas. The subscription of the students shall be half-a-guinea per annum, without entrance fee.

There shall be a council to manage the affairs of the institute, with full power, subject to the bye-laws, to do all such acts and deeds as shall appear to them necessary or essential to be done, for the purpose of carrying into effect the objects and views of the institute, rendering an account of their proceedings to the general meetings. The council shall consist of the president, vice-presidents, treasurers, secretaries, and a committee of ten members. A general meeting shall be held once in a year, or oftener, to choose the president, vice-presidents, treasurers, and other members of the council, with power to hold general meetings, from time to time, to make bye-laws, comprising the following objects; (1) regulation of the institute; (2) the admission of fellows; (3) the management of the estate, goods, and business of the institute; (4) the fixing and determining the number of vice-presidents, and other members of the council: and the time and manner of electing the president and vice-presidents, secretaries, and other members of the council, and the period of their continuance in office.

The institute shall publish a journal of its proceedings, and of those of its associated branches. A copy of which shall be sent to all members of the institute.

Local branches of the institute shall be formed in the principal textile manufacturing centres in Great Britain and Ireland, where there are as many fellows as shall be deemed requisite for the successful carrying on of such branch.

Papers read at one of the local branches, if of interest to the members of other branches, shall be read at the ordinary meetings of such branches, and discussion ensue thereon. When convenient, such papers shall be read by the author, but if not convenient, a competent reader shall be appointed, who, from his knowledge of the subject of the paper, may be able to assist the members in the full elucidation of the subject.

The ordinary meetings shall be held by the local branches as often as deemed necessary, for the display of improved textile and other machinery, for lectures, the reading of papers, and the holding of discussions on subjects of interest to the fellows of the institute, and to receive reports from the committees appointed to consider the various subjects of interest to the fellows of the institute. That general meetings of the institute shall be held annually, (?) and in such local centres as the council of the institute shall determine.

A permanent library shall be established, containing books and periodical literature of such a description as is of interest to the fellows, and compatible with the aims of the institution.

Local museums and libraries shall be established and encouraged by the council, containing collections of art, mechanical, chemical, and textile products of interest to the fellows of the institute.



Ramie Culture.

(Continued from Page 49.)



THE immense influence of climate upon the growth of the ramie will be illustrated by the following figures, which I quote from "La Ramie," without guarantee for correction:—

	Latitude.	Longitude.	Av. height of plants.
Avignon, France.....	44 deg.	3 deg.	0.88 yds.
Hyères, France	44 "	4 "	1.00 "
Antibes, France	44 "	5 "	1.10 "
San Remo, Italy.....	44 "	6 "	1.30 "
Perpignan, France ...	43 "	1 "	1.65 "
Gerona, Spain.....	42 "	1 "	2.10 "

By these figures you will see that a difference of 2 deg. of latitude produces a difference of more than 100 per cent. The nearer we approach the equator, the more luxuriantly the ramie grows, so it seems to me foolish to preach the culture of it in the Northern States of the Union. It is a remarkable fact that the ramie outlasted the severe winter of 1879 at the Jardin D'Acclimatation at Paris and at the Royal Botanical Garden at Berlin; but it cannot endure the severity of a New Jersey or a New York winter. Several attempts to cultivate the plant have been made by Mr. Fuller, editor of the New York "Weekly Sun," at his residence. Ridgewood, near Newark, N. J. All of them failed, as the roots were killed by frost. Light, sandy, silica-argilliferous or alluvial soils, which are easily irrigated, are most appropriate for this culture. Mr. P. A. Favier, of Villefranche, France, one of the foremost cultivators of ramie, and a man of large experience, once said: "Point d'arrosage, point de ramie," "Without irrigation, no ramie." Swampy subsoil and hard pan-soil are not fitted for its culture; the first would infallibly rot the roots and cause an early death of the plant, while the second would prevent them from their natural development. Grounds for ramie planting purposes must be well ploughed at a depth of at least one foot, and thoroughly harrowed; furrows have to be made from foot to foot, and the roots are to be planted in rows at a depth of from five to seven inches, according to their length, and at a distance of a foot from each other. The planting can be done from March to the end of October, but in the hot season care must be taken to moisten the ground well during the first fourteen days after planting. In planting in tropical climates, it is best to run the furrows from east to west in order to prevent the meridian sun drying out the soil; in temperate climates and countries where irrigation of the soil is easy, the direction should be south to north, as experience proves that a moist warmth contributes largely to the growth of height of the plant without furthering its formation of side-branches and of resinous matters. During the first year the plantation must be kept free and clear of weeds. In the second year the roots of one of two rows must be pulled out to serve for new plantation. The maturity of the stocks and the time for cutting is indicated by a brownish colour on the lower part of the stalks; they must be cut about two or three inches from the ground, and on an average two cuts per year will be obtained in the Southern States of the Union. The leaves left on the ground of the plantation make excellent manure, but a thorough application of liquid manure from time to time will much improve the yield; the woody parts of the stalks burned to ashes will also prove an excellent dung. If the stalks are to be decorticated in a green state perhaps three crops may be gathered, if irrigation be abundantly made; for decortication in a dry state a higher degree of maturity is required, and only two crops can be grown. I look at the legend of four or five crops as idle humbug! It is generally admitted that a two or three years' plantation will show ten stalks on an average per root or $210 \times 105 = 22,050$ roots $\times 10 = 220,500$ stalks per acre; each stalk weighs, when green, about $3\frac{1}{2}$ ounces; leafless and dry the weight will be reduced to one ounce approximately, or to 13,780 pounds per crop and acre, which would probably secure 2,950 pounds of marketable fibrous ribbons at only three cents per pound, which amounts to \$88.50, or in two crops a yearly gross benefit of \$177 per acre. Experiments in all countries where ramie is cultivated show that the character of the species "*urtica utilis*," or "*terra cissima*," requires a tropical climate and regular irrigation; it is essentially arbustive and inclines to formation of resin, which renders decortication and ungumming very difficult. The species "*urtica nivea*" or "white nettle," is better adapted to the culture of temperate climates. This plant is more vigorous and resists the influence of the cold; its stalk attains the height of from $1\frac{1}{2}$ to $1\frac{3}{4}$ yards, and its diameter is from $\frac{1}{8}$ to $\frac{1}{4}$ of an inch; the stalks grow straight and without branches, if planted close together. The question: "is there a good market for ramie fibres?" answers itself from the fact that prices in London, England, the principal market, are constantly advancing. At the present time Chinese importa-

tions are quoted at from 15 to 16 cents per pound. The general depression of the European textile industry has recently caused a decrease of from 2 to 3 cents per pound. Several houses in New York city and Newark, N. J., are offering fair cash prices for the crude ungummed bark. I am of the opinion that the actual price is still too high, and that it has to be lowered at a rate of 8 to 10 cents per pound in order to render this most valuable fibre apt for the use of working people's merchandise, for the manufacture of sail-cloth, sewing yarns, colodion, celluloid, lint, and hundreds of other useful articles which are now made of flax, hemp or cotton. Reduced rates for ramie are near at hand. European markets will soon be plentifully supplied by East Indian plantations, and the hours of flax and hemp are numbered, while prices of cotton will undergo such a terrible shock as to render its culture questionable. Gentlemen of the cotton culture and of the sugar-cane plantations! I submit to your examination a ramie stalk of eleven feet in height, grown at Bakersfield, in California, Chinese ramie scraped by hand, and also ramie grown in Louisiana, decorticated by machines actually in operation at this New Orleans Exposition; you may also see ungummed and bleached ramie, sliver, noils, yarns in all colours, handkerchiefs, stockings, lace curtains, plushes, ramie with silk and worsted wool, and carded wool, either as warp or as weft or in mixture. The samples of pure ramie are manufactured at Zittau, in Saxony, and at Essonnes, in France; also those with worsted wool are of German production; those with silk came from Lyons, and those mixed with wool are of American production. All these samples show the gigantic progress of the European textile industry; immense quantities of these goods are now imported into this country from England, France and Germany, while our home industry is observing a lethargy that must fill the breast of every true American patriot with shame and sorrow. Indifference to this industry is a blot upon American enterprise! Already a few manufacturers are awaking from slumber and trying ramie fibres. Let us hope that the culture of this plant soon will make such a progress in quantity and quality as to enable us to provide for all wants of the home textile industry, to export many thousands of tons, and to give remunerative work to a multitude of busy and honest American people that at this moment are looking despairingly to the future. There is nothing to prevent American agriculturists from engaging in the cultivation of ramie and the wild-growing American nettle, *Urtica postulata*, of which a small quantity of crude stalks and decorticated fibres are also exhibited here. The last-named plants were cultivated last year by myself in the New Jersey swamps, near Newark, and are perfectly adapted to culture in higher latitudes. The profit on them is from \$30 to \$40 per year per acre, and the cost of the roots is exceedingly small. It is a perennial plant, which needs no care at all, and proves a great success even in a poor soil. Some five or six decorticators are working at this Exposition, others are expected, and all of them show proof of American genius. In their present state they fulfil every reasonable expectation, and they need not fear European competition in use. Some slight improvements will augment their capacities, and perhaps their motive power. I intend to watch carefully the work done by these machines, and to publish my observations at an early date in American daily newspapers and periodicals. I see a great and immense future for this material, and if you take my advice you will lose no time in starting its cultivation. Go ahead, gentlemen of the cotton fields, and you cultivators of the sugar plants! Go quickly ahead in the culture of a promising agricultural industry, and prove once more to the entire world that the spirits of your illustrious ancestors, George Washington and Thomas Payne, have found a mighty echo in the minds of their youngest descendants. The remunerative culture of jute has been fully illustrated by one of the foremost savants of the United States, Mr. S. Waterhouse, professor of the Washington University at St. Louis, Mo. In a letter from his able pen, dated February 15, 1883, about this precious material, he says: "No vigour of language can too earnestly express my conviction that a great, great industry, productive of vast opulence, now awaits the hand of Southern enterprise. The lapse of time has only strengthened my belief that the Southern States can, by organized effort, produce a new vegetable fibre, which, ranking next to cotton in value, will not only enrich themselves, but also increase the textile resources of the world." I warmly recommended the lecture of the special report to the Department of Agriculture of this savant on "Jute Culture and the importance of the Industry," to interested parties; and in concluding, I announce myself ready and willing to give any further information about the culture and the industry of the ramie and of the forest nettle that you may require; and I leave this place with my best wishes for the eternal prosperity of the United States and her generous people.

A correspondent writes as follows:—"I have often thought it would be advisable to have a conference of those engaged and interested in Textile Industries, for the purpose of adopting a somewhat more uniform mode of expressing ideas on technical matters, such as are connected with weaving and designing. There are so many different modes of fixing the basis of the count, grist or size, of yarn alone, that much time is occupied in translating the one into the other, and very often calculations are unnecessarily complicated."

Silk.—Combing and Spinning.



SILK is the product of the silk-worm, the caterpillar of the mulberry-tree moth, and belongs to the tribe of mealy-winged nocturnal insects. The eggs of this moth are smaller than grains of mustard seed, and are produced in a suitable temperature in immense numbers. In some climates the eggs can be preserved, without being hatched, through the winter, until the time arrives for the mulberry tree to put forth its leaves in the following Spring. This tree, of which the worm seems to have a monopoly, forms its entire food, for whilst other trees and vegetables in its vicinity are devoured by any quantity of insects, the mulberry tree is seldom interfered with by any of these. In some parts of China, its natural home, it lives in the open air; there it passes through all its various changes without any attention from man, whose only care it is to collect the cocoons when the proper time arrives. In other parts of China, however, the worm requires great attention in its rearing, in order to bring it to perfection. The mulberry-tree of this country is not so well adapted for the food of this little insect, although it will feed upon it eagerly, as the white-fruited mulberry indigenous to China. The latter tree is now cultivated to some extent in Southern Europe, and is planted by the road-sides; this species comes into leaf fully two weeks before the black mulberry, which is a decided gain in the rearing of the worm. The leaves of the tree are sold by weight in South Europe, and are selected by the rearer according to the age of the caterpillar, the most tender leaves being chosen for the youngest. The climate, being too cold, the white mulberry does not thrive in Britain, and in France there is still another tree of the same species greatly prized by the inhabitants for the size of its leaves, and because it is easy to transplant. Attempts have been made to store food for the worms by drying the leaves, reducing them to a fine powder, and preserving in jars until wanted. It is said that, when the powder is moistened by water, the insects feed upon it readily. The food thus ensured is likely to prove of great service in late seasons, as well as when, from any cause whatever, there is an entire or a partial failure of the mulberry crop; it is also thought that three or four crops of cocoons, per annum, may be raised, even in Northern climes, by keeping successive hatchings of eggs in warm rooms, and adopting the powder method of feeding them. The silkworm, when first hatched, is about a quarter of an inch long; if it be well supplied with food, it will remain contentedly in one spot during all the changes through which it passes, so that there is no trouble to keep it within bounds. After eight days' feeding and rapid increase in size, it prepares to change its skin, the first having become too small for its body; it then remains three days quite without food, during which time a secretion forms on the surface of the new skin; this helps the caterpillar to cast off the old one, but the operation is further facilitated by silken lines which the insect casts off and fixes to any adjacent object; these lines hold the old skin tightly while the insect creeps out. The whole of the former covering of the body is thus cast off, including that of the feet and the jaws, but it is done with difficulty, and sometimes, even, the skin breaks, and a portion of it remains stuck fast to the body, compressing it so much as sometimes to cause death to the worm. The moulted insect quickly recovers its appetite, the new skin is soon filled out, and in five days another moult becomes necessary. Four such moults are passed through before the caterpillar attains its full growth. After these are completed, its appetite becomes very voracious, and the best parts of the mulberry tree disappear with extraordinary rapidity. The insect is now about three inches in length; the body consists of twelve membraneous rings, which contract and elongate as it moves; it has eight pairs of legs, the first three being covered with a shelly or scaly substance, which substance also invests the head; the jaws are strong and like a saw; beneath the jaws are two small holes through which the insect draws its silken lines; the silk is a fine, yellow, transparent gum, collected in slender vessels, described as being wound, as it were, on two spindles in the stomach; these vessels, if unfolded, would be about ten inches long. The insect breathes through nine pairs of breathing holes (spiracles), placed at intervals along each side of the body. It has seven small eyes near the mouth. When the caterpillar reaches maturity, it is of a rich golden colour; it leaves off eating, and chooses a quiet corner in which to commence its labour—spinning its cocoon. It first forms a loose structure of floss silk, and then, within an oval shaped nest of the closest texture, it remains working until it is gradually lost sight of within its own beautiful winding sheet; taking no food, and emitting so large a quantity of silk, its body is reduced to half its size, and on the completion of its cocoon, it changes its skin once more, and then becomes a chrysalis—to all appearance dead. It remains in this condition two or three weeks, when it comes forth a perfect winged insect. The silk-moth, in coming forth from its cocoon, pushes aside the fibres, first moistening the interior of its habitation with a tasteless liquid from its mouth to dissolve the gum which holds the fibres together; the moth has no teeth, therefore it cannot gnaw its way out as is generally supposed. In its perfect form the insect lives only two or three days; the female dies soon after laying its eggs, and the male does not long survive her. The common silk-worm is not the only caterpillar from whose cocoons silk has been obtained for manufacturing purposes, but all the others are so much inferior in value that little mention is made of them. The larvæ

of many of the European moths produce a strong silk, and the worms of America yield a material that has been manufactured into certain articles of clothing by some of the inhabitants of the South. Ancient Mexicans used the internal layers of the white cocoons, which strongly resemble Chinese paper, as a material for writing upon. Within the last few years an epidemic has broken out amongst the French silk-worms of so destructive a character that many efforts are being made to counteract its evil effects. With this object in view, new kinds of silk-worms have been brought from other countries, but at present, the silk-worm obtained from them is of inferior quality. The treatment of this insect has been brought to great perfection in Italy. Formerly the eggs hatched out of the proper season, and therefore dependent on artificial warmth, were placed in beds of manure, or worse still, were enclosed in small bags and carried about by persons, next the skin, in order to ensure a sufficient degree of warmth. The present and superior method is to heat an apartment to the proper degree by means of a stove; the worms are first washed in water, then in wine, to separate the light eggs as well as the dirt and the gummy envelope which surrounds the heavy ones. The temperature in the hatching room is raised to 64 degrees first, and then gradually one or two degrees daily until it reaches 82 degrees, which is not exceeded. Pieces of coarse muslin or of white paper pierced with holes, are placed over the eggs, when they are about to be hatched. Through these the worms creep to the upper surface, and are removed as soon as possible to a cool place. Young leaves of mulberry trees are then laid upon the pieces of muslin or paper, when the worms eagerly settle upon them, and thus can be transferred to trays and removed to another place called the nursery. This nursery is a dry room of a certain warmth, with windows on both sides, so that free ventilation may be obtained; lime is used to purify the air, and a thermometer and hygrometer are used to regulate the heat and moisture of the place, for the latter is apt to be plentiful where silk-worms are kept, and is prejudicial to their well-being. Moist exhalations arise from the leaves and from the bodies of the worms. Fermentation also soon shows itself if the litter and dung be not quickly removed from the trays. Inattention to these matters will be a fertile source of disease amongst the insects, and may carry off thousands a-day. One disease to which they are subject is of an extraordinary character, and consists of the formation of a minute plant or mildew within the living insect. Damp and fermenting food and litter produce, in the first place, amongst the fatty matter of the body of the caterpillar, an infinite number of sporules, supported by minute stems. These increase to such a degree that they soon pierce the skin, and give a mealy appearance to the body of the insect; the seed is ripened and borne by the winds to every part of the nursery, carrying mischief with it wherever it settles, and causing death to the worms. The dead worms are then a source of contagion unless destroyed at once.

(To be continued.)

Trade of Lyons.

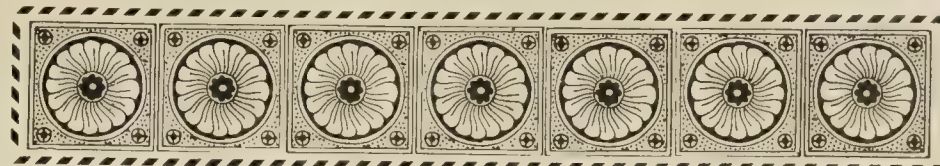
According to a statement in the *Central Blatt für Textil Industrie*, the production of silk goods in Lyons, for the last four years, was as follows: 1880, £14,400,000; 1881, £9,600,000; 1882, £5,840,000; 1883, £5,640,000. Various causes have contributed to the above result. Lyons manufacturers, who at one time commanded the world's markets, have now important competitors in Germany and Switzerland. This competition does not extend to the better classes of goods (from 13s. per yard upwards); but this fact does little to alleviate the condition of business, inasmuch as nine-tenths of the European consumption of silk goods may be classified amongst various articles containing an admixture of cotton ranging from 40 to 90 per cent., and starting from a very low range of prices. Up to the year 1880, an attempt was made to hold a position against German and Swiss rivals, and the production of goods containing an admixture of cotton had rapidly increased from £1,400,000 in 1877, to nearly five times that amount in 1880, when this class of goods represented about one-half of the entire out-turn. Since that period there has been a gradual falling off, and the amount for 1883 was only £3,800,000. The production of pure silk goods has dropped from nearly £8,000,000 in 1880, to £1,800,000 in 1883. The temporary free admission of the finer counts of cotton yarn into France has not been productive of the benefits at one time anticipated. It is stated that about nine-tenths of the yarn imported is under the limit of fineness specified by the decree in question. Hence, Lyons has not gained much by the new arrangement, and efforts are being made to obtain a more extended application of this principle. French spinners are making counter-representations to the authorities, as the step asked for would, it is believed, be fatal to them. The difficulties of the position are intensified by the fact that the French duty on cotton yarn is six times greater than that levied in Germany.

Ornamentation of Textiles.

(Continued from Page 41.)

FROM the epoch that expired with the Roman Empire, to the period which commences with Mediæval times, there appear to have been six or seven centuries of a weary and toilsome preparation, everything in a mixed and confused state, the world was, as it were, a vast chaos, and those forces which were destined to form a new civilization were at work in one confused mass, without any form or order. During the time of the Vandals, when they were masters of Africa, the Suevi of Spain, the Ostrogoths of Italy, and even up to the time of Charles VIII., the people are considered to have lived in an age that was dark through ignorance, and barbarous through poverty and want of refinement. Dr. Hallam, speaking of these dark times, says—"At these times internal trade was hardly preferable to agriculture." There is scarcely a vestige to be discovered for several centuries of any considerable manufacture. Rich men kept domestic artizans among their servants, and kings, in the ninth century, had their clothes spun, woven, and made, by the women upon their farms, but the peasantry must have had theirs supplied by purchase, therefore we must conclude that each town or state had its manufacturer and weaver. During this period Venice was at the head of commerce, and Amalfi held the second position. The trade in cloth appears to have been illicit, as we read in a passage in Luitprand's relation of his embassy from the Emperor Otho to Nicephorus Phocas, that the Greeks, making a display of their dress, he told them that "in Lombardy the common people wore as good clothes as they." "How," they said, "can you procure them?" "Through the Venetian and Amalfitan dealers," he replied, "who gain their subsistence by selling them to us." The foolish Greeks were very angry, and declared that any dealer presuming to export their fine cloths should be imprisoned and flogged. Schmidt tells us of a manufactory in the ninth century, of which he says "cloths were manufactured and exported from Friesland to England, and other ports, in the same century." Gregory of Tours, says, "Even in these unsettled times, the pilgrimages to the East redounded to the advancement of the industrious arts," and on the evidence of these devout pilgrims, returning from the Holy Land, he speaks of cotton, which he describes as "a wool which is spun like that of sheep, and of which garments are manufactured." In another place, Gregory of Tours seems quite delighted with the discovery of the cotton plant, which, he says, "is a tree, the fruit resembling small gourds, and is covered with a somewhat rough skin, that serves to protect the down contained in it, and when I was at last enabled to see and handle it, it was not without admiring its extreme whiteness and delicacy." From these extracts, we may be assured that artistic life was nearly extinguished for some nine centuries, and it would be a very difficult task to describe the condition to which all the people were reduced, who formed an integral part of the Roman system, and fell with its destruction. But, although the people were in a miserable state, we must not receive too literally the gloomy descriptions that Demegot, Pope Agatho, Gregory of Tours, and other contemporary writers have left us of that sad period, especially that which concerns the present subject; we will admit that the invasions of the barbarians, the political and religious troubles, had a great deal to do with the lack of energy in, and the decay of, the fine arts, but we must also admit that, with all these disturbances, artistic life was not entirely extinguished. The fine arts were cultivated not only in Italy, but also in Gaul, even after the Franks had established themselves there, and whatever was the issue of battles, whether victory favoured the Cæsars or the barbarians, industry, in some form, must necessarily have been called into requisition, as is proved by the extract from Gregory of Tours, when describing the rediscovery of the cotton plant. At a very remote epoch, we read of the Indians knowing how to manipulate this cotton, which they called Tala, and from which they produced the most varied articles. A Chinese writer, who flourished in the sixth century, refers to the exquisite muslins, embroidered with gold and silver, which were manufactured in the principal cities of India, and his patriotic spirit takes fire at the sight of the noble daughters of the lettered class preferring for a moment these foreign materials to the queenly and brilliant silken fabrics of his native land. Referring to Dr. Birdwood's work on Indian Arts, we read of many wonderful specimens of workmanship in cotton, linen, and other raw materials. In the time of Jehangir, Dacca muslin could be manufactured so light and gauzy that a piece 15 yards long and one yard broad, weighed only 900 grains, the price of which was £40. The three pieces presented to the Prince of Wales, which were made expressly for him, were 20 yards long and one broad, and weighed 1,680 grains, or three and a half ounces each. Tavernier states that the ambassador of Shah Safy (A.D., 1628, 1641) on his return from India, presented his master with a cocoanut, set with jewels, containing a turban 30 yards long, so exquisitely fine that it could scarcely be felt by the touch. In the handbook to the Kensington Museum, we read of muslin, which, when laid wet on the grass, became invisible, and, because it became undistinguishable from the evening dew, it was named "subhnam," i.e., the dew of evening.

(To be continued).

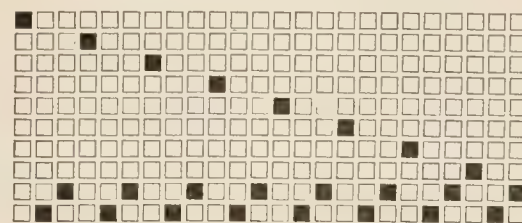


Some Remarks on Double and Figured Cloth.

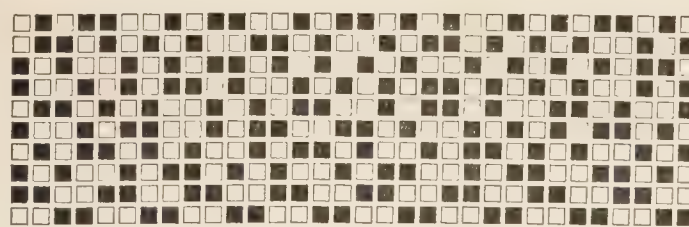
BY J. C. GOODFELLOW, HAWICK.



THE term "double cloth" is applied to a number of fabrics, the construction of which scarcely admits of such a name being properly applied to them. When we examine the various kinds of cloth which come under our notice, we observe that there is a gradual approach of single to double cloth, so that it becomes somewhat difficult to say of some makes whether they are single or double. The definition of single cloth or of double cloth, when we have a purely single cloth, or a purely double cloth, may be quite accurate, and agree with the look, the feel, and the weave, but it is not so when we come to look at, and examine, cloths that present features which are at variance with the definitions. It is this impossibility to class, or properly define, certain kinds of cloth which has caused some designers to recognise only three kinds of weave, as Mr. Ashenhurst does in his work on "Weaving and Designing of Textile Fabrics," viz.:—Plain cloth, figured cloth, and gauze or cross woven cloth. There is a class of figured cloth which does not seem to be much noticed by those who have written on the subject of "Design in Cloth." It is frequently called "figured double cloth," but it seems to me that it is of a nondescript character, partaking of the nature of both single and double cloth. This class is often made as light in weight as eight ounces, and occasionally as heavy as twenty ounces. Of course, the difference in weight, in a great measure, depends on the size or grist of the warps and wefts that are used; at the same time, there is also a considerable degree of difference obtainable by varying the draft (or draught) of the warp, and also by making use of designs which are large blocked figures, or small broken up figures. The chief feature in this class of cloths, so far as the weave is concerned, is that one half, at least, of the warp threads is made to work plain, or celtic, while the rest of the warp is made to form the figure. In order that the latter may show clearly, the weft must be of two distinct colours, and woven one and one, that is to say, a pick of white and a pick of black alternately. When it is not desired that the figure should show boldly, colours or shades which do not show so marked a contrast must be used, as black and a light mid-grey, or white and a dark or mid-grey. Cloth of this kind can be woven in as few as four shafts or leaves, but in so few the design is limited to a very small number of changes; when, however, the number of shafts is greater, a still larger variety of designs can be used, while, if the number of shafts be increased to ten, or more, a very large number of designs can be used. The following



Draft.



Pegging Plan.

draught and pegging plan for ten shafts in a witch or dobbie loom will illustrate these remarks. If the warp threads on the two front shafts were, say, 40 skein 2-fold, that is 40/40 twisted, and the other threads on the eight back shafts, say, 10 skein yarn, woven

in a reed having 16 splits on 1 inch, and the weft all 10 skein yarn, a very good cloth would be produced. The weft, of course, must be of two colours, and woven a pick of one, and then a pick of the other, or as weavers would say, "pick about." There is scarcely any limit to the variety of patterns, as regards design or weave, colour, weight or quality, that can be produced in this class of cloth, which, for durability and firmness, can only be excelled by common plain cloth.



ORIGINAL DESIGNS.

On our first plate, we present to our subscribers a very handsome and elaborate double-page design for a Lace Curtain. It is the work of Mr. G. Lees, of Kidderminster, the merit of whose productions for various classes of fabrics is undoubted.

Our second plate contains a design suitable for a Brussels or Tapestry Carpet. It may also be used to advantage for Cretonne or Tapestry Fabrics. We are indebted to Mr. R. Lord, of 97, Park Road, Bradford, for this sketch.

TO MANUFACTURERS AND DESIGNERS OF CLOTH.

The latest patterns of French and English Coatings, Vestings, Suitings, Fancy Cloths, Cassimeres, Tweeds, Mantle Cloths, &c. These Patterns give the latest Designs and Colourings for Cloths for the Spring and Summer Seasons in 1886.

100 SAMPLES FOR £2. CARRIAGE PAID.

A remittance must accompany order, made payable to H. and R. T. Lord, the "Journal of Fabrics and Textile Industries." Office, 10, Ann Place, Bradford, England.



MONTHLY TRADE REPORTS.

Wool.—This branch of trade, owing to the Russian question, has been in a somewhat depressed condition as far as the quantity passing hands has been concerned, but the prices have not been sensibly affected. Deep grown wools have been steady in the Yorkshire district, the inferior fine wools—which compete with Botany and such like Colonial wools—have met with more inquiry. In Scotland, staplers have held their wools firmly, and, as a rule, have refused any concession in prices. At the recent sales in Glasgow, a fair proportion was sold at ordinary rates. In the yarn branch, spinners have been firm in their demands for nearly all counts of yarns, the ordinary weft business having been moderately good, whilst fancy yarns have met with a better demand. The piece trade has been unsatisfactory, very few orders coming to hand either for the home trade or for export.

Cotton.—The cotton trade has been considerably affected, from day to day, by the changes in the political outlook, and the raw material has fluctuated slightly in prices during the month. Both in the yarn and cloth branches, business has been in an unsatisfactory condition, the spinning trade being especially affected. Manufacturers have bought sparingly of yarn, and only to meet actual requirements, and have generally offered lower prices. Stocks of fabrics are not large, as manufacturers have lately refrained, as much as possible, from making to stock. Orders for cloth could be booked, but as a rule, they are refused, owing to the low rates at which they are offered. The turnover has amounted to about the average of the last few months.

Woollen.—In the Yorkshire districts, the political question has to a great extent interfered with business, especially the export branch. Fancy cloths have taken the lead in

the demand both for home and export, the worsted department meeting with most favour. The plainer styles of cloths have met with a quieter sale. The manufacturers of fancy cloths are now numerous, as, many, recently engaged on the plain goods, have turned their attention to the fancy trade. Cheap tweeds for suitings have met with a fair sale, although there would have been a larger demand in the Yorkshire and Lancashire districts had it not been for the depression existing in the iron, coal, and cotton trades. Machinery is fairly well employed. Prices keep moderately firm.

Linen.—Business in this branch has shown more activity, and manufacturers have been, on the whole, busy. There is a fairly hopeful feeling in all departments. Prices have had a tendency to rise, owing to the advances in the prices of raw material. The jute trade has improved considerably, and prices have advanced owing to the complication with Russia. The arrivals of raw material have been small during the month.

Lace.—A steady business has been done for most kinds of laces, but prices have not been very remunerative. In the fancy departments a large proportion of the business done has been in coloured goods, and the demand for these is likely to continue. The curtain branch is the least satisfactory, and has been very disappointing; the supply of goods being in excess of the demand, the prices have consequently been affected.

Carpets.—The tapestry trade, although a fair number of looms have been engaged, has been devoid of animation, still prices have had a firmer tendency. The volume of business done during the month, and the number of orders placed, have been large. For cheap Brussels, there has been a good demand at fairly remunerative prices; the rug trade is generally good, and the profits are greater than in any other department.

A New Cotton Plant.

For many years A. A. Subers, of Macon, Georgia, has been carefully experimenting to hybridise the cotton plant that grows wild in Florida with the common okra. The new plant retains the okra stalk and the foliage of the cotton. Its flower and fruit, however, are strikingly unlike either cotton or okra. The plant has an average height of two feet, and each plant has only one bloom. This is a magnificent flower, very much like the great magnolia in fragrance, and equally as large. Like the cotton bloom, the flower is white for several days after it opens, after which it is first pale pink, and gradually assumes darker shades of this colour until it becomes red, when it drops. For about ten days the fruit resembles the cotton bell, and then its growth suddenly increases, as if by magic, until it reaches the size of a big cocoanut. Not until it reaches this size does the lint appear. Then its snowy threads begin to burst from the boll, but are securely held in place by the okra like thorns or points that line the boll. One experienced picker can easily gather 800 pounds a day, and fast hands much more. Each bell produces about two pounds of very long stapled cotton, superior to the Sea Island, and at the bottom of the bell there are from four to six seeds, resembling persimmon seed. This new cotton, therefore, needs no ginning. Such a plant would revolutionise the cotton industry of the South.—*Florida Times-Union*.

Woollen Manufacturing in New Zealand.

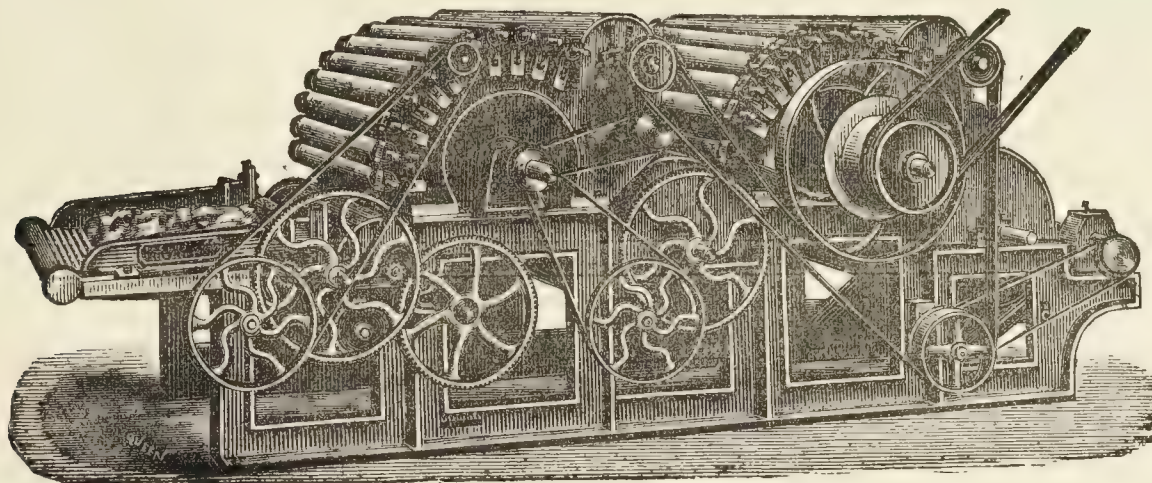
The woollen manufactures of New Zealand appear to be making great progress, although the industry is yet in its infancy. Already three or four prosperous mills are running, and one of them—the Mosgiel Woollen Company, situated about ten miles from Dunedin—is producing goods absolutely unsurpassed in quality and finish. All the newest machinery is employed, and such is the demand for the manufactures, that it has to be kept running night and day to meet it. The electric light illumines the vast structure, and an air of prosperity pervades the whole concern. Then there are the Roslyn Woollen Mills, on which a capital of £72,916 has been expended, and others at Kaipoi, fourteen miles from Christchurch. The united consumption of wool by these mills is over 2,000,000 lbs. a year. A significant fact in connection with this young industry is the high price its products fetch. Whereas English blankets realise only from 1s. 7d. to 2s. 7½d. per lb., the New Zealand ones sell readily at about 3s. 7d. per lb. The explanation is found in the entire absence of shoddy from the manufactures.

MACHINE "GARNETT"

*For Opening Hard Twisted
Woollen and Worsted
Waste.*



*À ouvrir les laines fortement
frisees et les dechets
de laine.*



These Machines are guaranteed to be of the very best quality, both as regards material and workmanship, and possess many recent improvements.

We beg to announce that we have just obtained
ROYAL LETTERS PATENT

For improvements in these Machines, whereby we are now able to put 14, 16, and even 24 rows of teeth per inch on to the cylinders, whereas formerly we could not exceed 12 rows per inch.

Ces machines sont garanties de première qualité, sous le rapport du choix des matériaux et de la construction. Elles renferment plusieurs perfectionnements tout nouveaux.

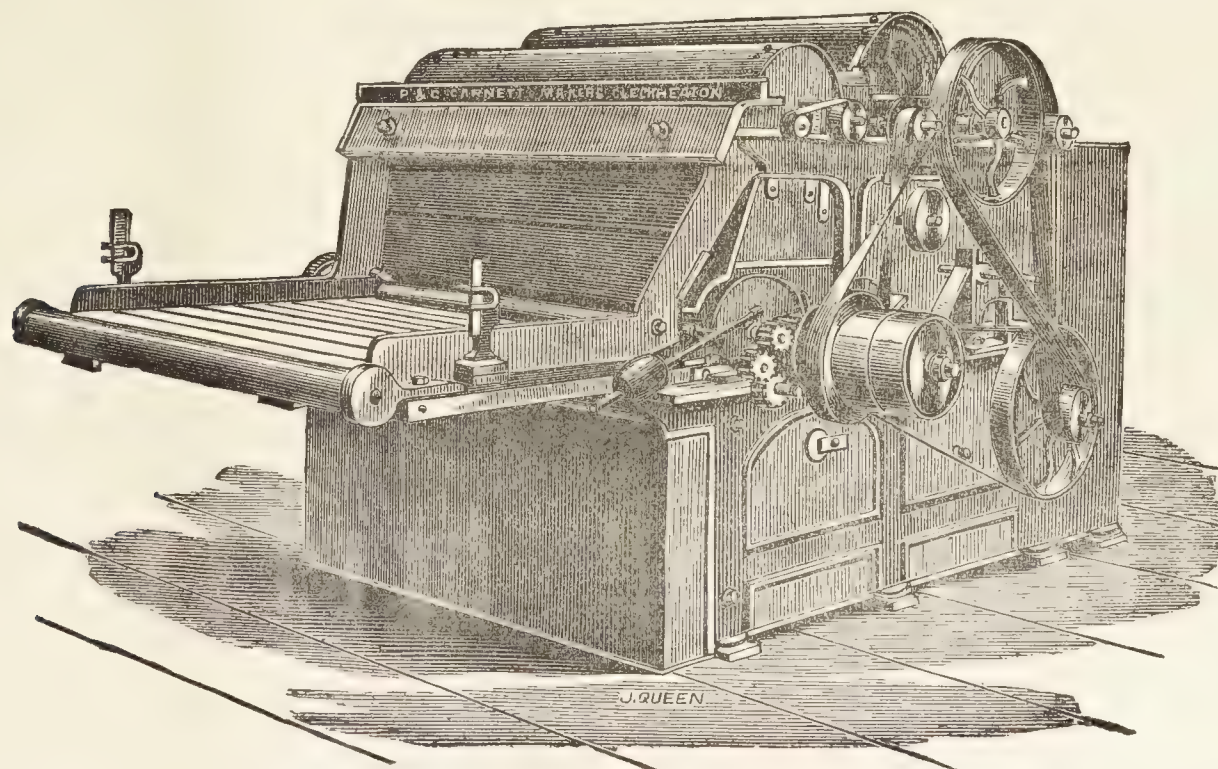
Nous venons d'obtenir
UN BREVET ANGLAIS

Pour un perfectionnement au moyen duquel nous pouvons placer 14, 16 et jusqu'à 24 rangs de dents au pouce sur les cylindres, tandis que jusqu'alors nous ne pouvions dépasser 12 rangs au pouce.

P. & C. GARNETT, SOLE PATENTEES,
CLECKHEATON, YORKSHIRE.

WHO ARE ALSO MAKERS OF
GARNETT'S PATENT COTTON GIN,
Unequalled for fast Seed Cotton.

NOUS CONSTRUISONS AUSSI
L'EGRENOIR BREVETÉ DE GARNETT
Sans rival pour la préparation des cotons à graine dure,



**IMPROVED WOOL CLEANING AND BURRING
MACHINE,**

Capable of cleaning 1,500 lbs. to 1,600 lbs. of Wool per day. The very best and most economical machine for this purpose which has yet been introduced to the public. Also

GARNETT'S PATENT METALLIC CARD,

For covering burr rollers and breasts of carding engines for woollen and worsted, and
TAKERS-IN OF COTTON CARDING ENGINES.

From Mr. ROBERT PLATT.

In answer to your inquiry of the 7th, I have had your patent Metallic Cord in use more than twenty years, and am very much pleased with the working of it. Its advantages are that it is much cleaner and less costly than leather or any other covering.

**LA MACHINE PERFECTIONNÉE À NETTOYER
ET ÉCHARDONNER LES LAINES,**

Pouvant nettoyer 1,500 à 1,600 livres de laine par jour. C'est la meilleure machine et la plus économique qui ait jamais été offerte pour cet emploi à l'industrie. Nous construisons aussi

**LES CARDES MÉTALLIQUES BREVETÉES
DE GARNETT,**

Pour garnir les alimenteurs, et poitrinières des cardes à laine et à laine peignée
LES BRISEURS DES CARDES À COTON.

Attestation de M. ROBERT PLATT.

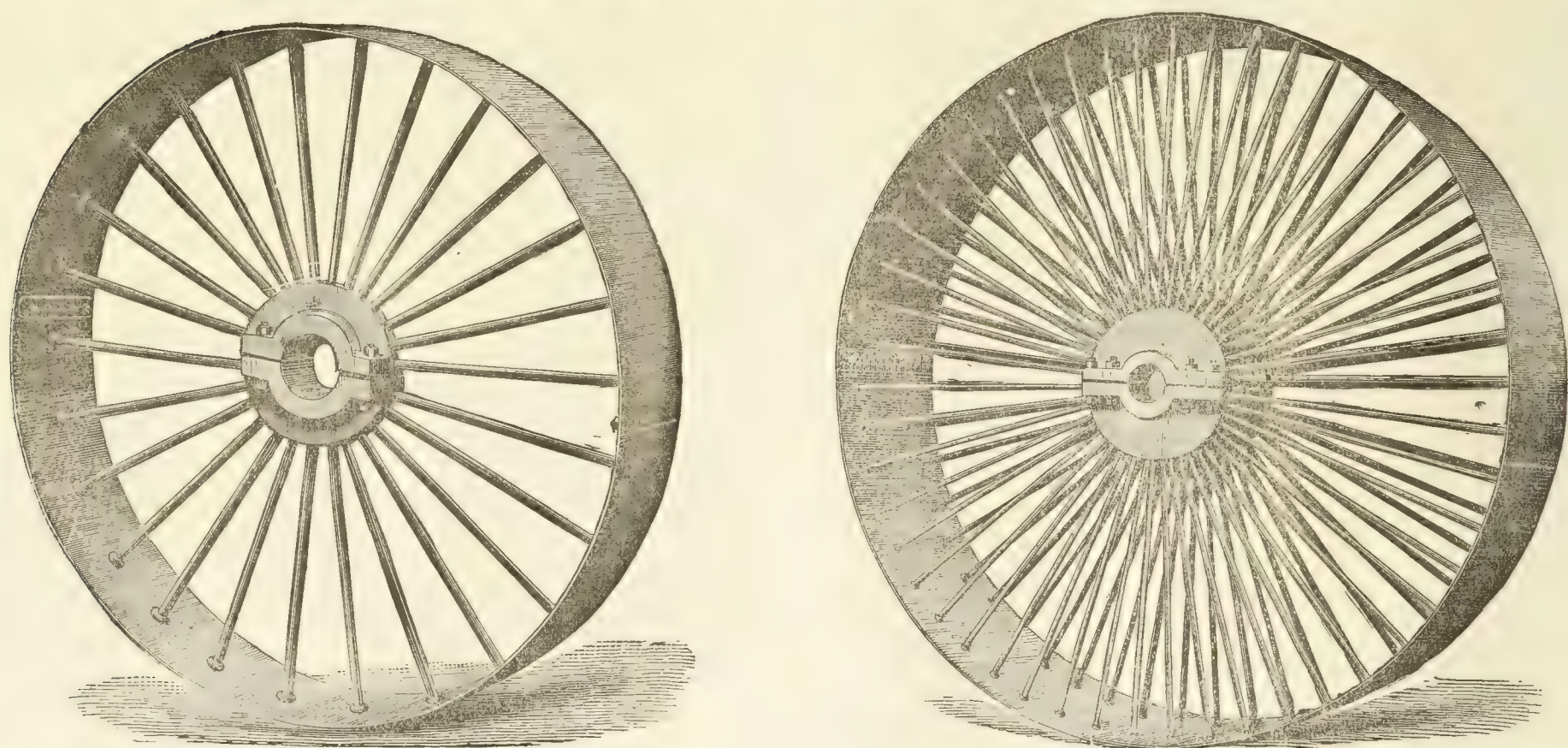
En réponse à votre lettre du 7 ct. j'emploie depuis plus de vingt ans votre système breveté de cardes métalliques et j'en suis très satisfait. Il possède l'avantage d'être beaucoup plus propre et moins cher que le cuir ou tout autre genre de garniture.

Agent—Mr. C. BORISSOW, Rue a Fiens, 3 ter. Lille, FRANCE.

RODGERS' PATENT WROUGHT IRON PULLEYS, SPLIT OR SOLID.

ALL SIZES FROM 6 INCHES UP TO 24 FEET DIAMETER.

Over 45,000 in use.



THE BEST PULLEY IN THE WORLD.

Wrought Iron THROUGHOUT, RIM, ARMS and BOSS.

THE ONLY WROUGHT IRON PULLEY MADE.

SOLE MAKERS—

HUDSWELL, CLARKE & Co.

RAILWAY FOUNDRY,

LEEDS, ENGLAND.



LACE CURTAIN.

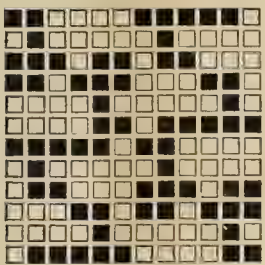


BRUSSELS CARPET.



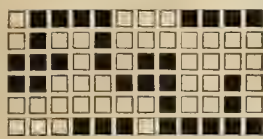
Worsted Coatings.

No. 281.



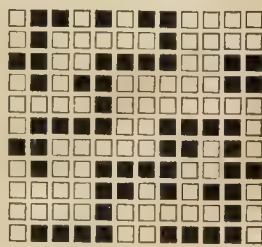
Design.

No. 282.



Design.

No. 283.



Design.

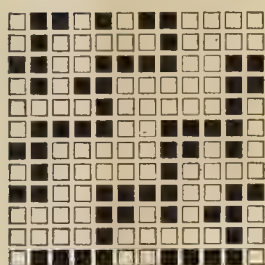
Face—Warp $2/48$ worsted.
Weft $2/48$ „

80 picks per inch.
75 ends per inch.
 $12\frac{1}{2}$ reed.

Backing—Warp $2/40$ cotton. 6 ends in each split.
Weft 12 skeins woollen. 66 inches wide in the loom.
56 „ when finished.

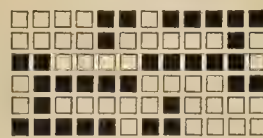
The above particulars apply to Nos. 281, 282, and 283.

No. 284.



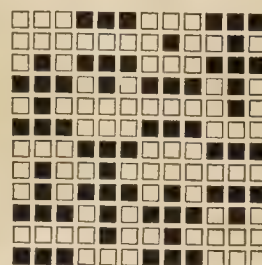
Design.

No. 285.



Design.

No. 286.



Design.

Face—Warp $2/48$ worsted.
Weft $2/48$ „

80 picks per inch.
75 ends per inch.
 $12\frac{1}{2}$ reed.

Backing—Warp 20 skeins woollen. 6 ends in each split.
Weft 12 „ „ 66 inches wide in the loom.
56 „ when finished.

The above particulars apply to Nos. 284, 285, and 286.

Figured Matelasses.

Face warp $2/40$ mohair or lustre worsted.

Back „ $2/36$ dyed black cotton (Egyptian).

Face pick $2/40$ „ „ „ „

Fulling or wadding 4 skeins woollen.

Back pick 7 „ „

Straight over draft on 24 shafts.

Face warp 3,480 ends, or 60 ends per in. and 58 ins. wide.

Back „ 1,740 „ 30 „ „ 58 „ „

30 ends per inch.

60 picks per inch.

3 ends in a split.

30's reed.

54 inches wide when finished.

The face gear should have 2 face threads in each mail, and these must be divided in the slay, so that 2 threads, 1 each from two different shafts, may be in one split, thus having a cotton end or backing warp between them, thereby dividing every face thread in the warp, which will produce a very even piece.

Drawn—2 ends of worsted or mohair on 1 shaft.

1 end of Black cotton on 1 shaft.

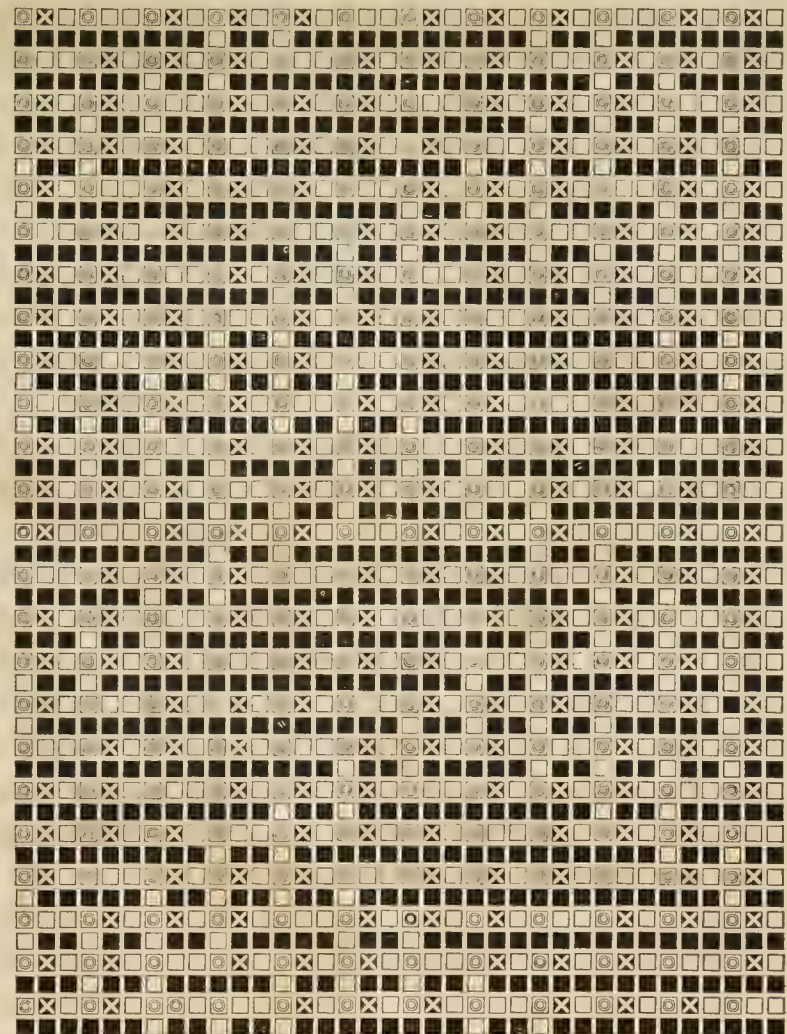
See plan. Wefted—1 wadding.

1 backing.

1 face.

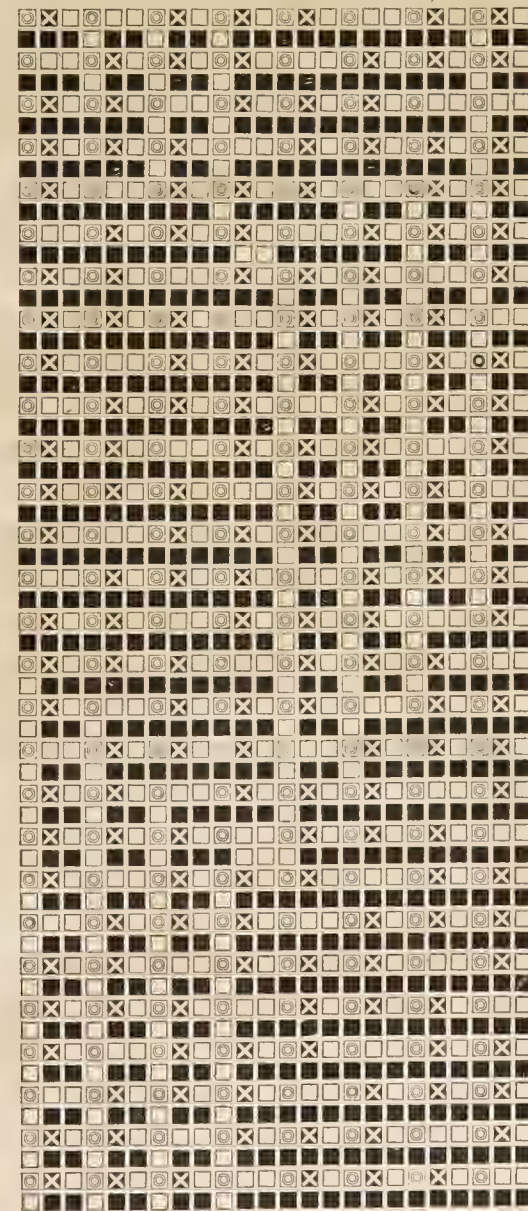
3 picks.

No. 275.



Design.

No. 276.



Design.

A subscriber writes, asking us to explain the purposes of the four kinds of type often used in our designs. We, therefore, give the explanation in the hope that it may assist others of our subscribers out of their difficulties. Take for instance the Matelasse goods given in our Journal:—
The ■ represents the face figure, warp up.
The □ is the face ground, warp up.
The ⊗ is the backing warp, also warp up.
The □ indicates warp down. Every ■ should be taken for 2 threads, as per instructions given. In all cases of fancy figured goods, the ■, the ⊗, and the □ must be taken as warp up, and the □ as the pegging plan.

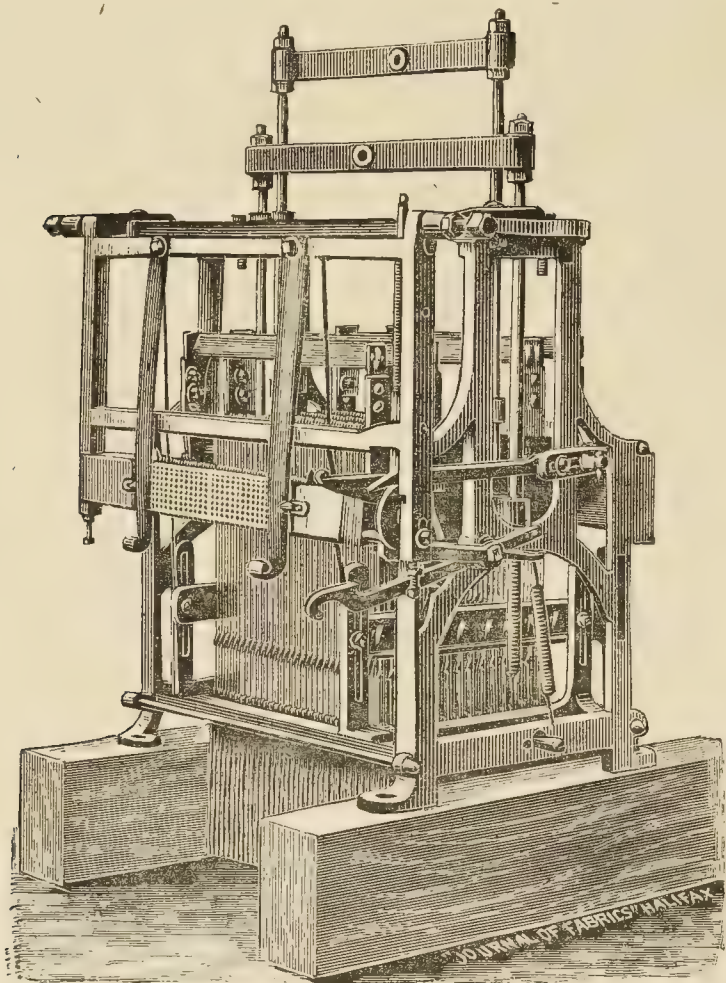
We beg again to draw the attention of our readers to the importance of the proposed British Textile Institute, as set forth on page 50 of our present issue, and to urge upon manufacturers, and those in training for such, to fill up the form enclosed in the Journal at their earliest convenience, and to return it to Mr. Thomas R. Ashenhurst, Technical College, Bradford.



MACHINERY, TOOLS, &c.

Patent Double Lift Jacquard for Weaving Figured Fabrics.

Some time ago we gave a description of a new double lift Jacquard, patented by Mr. Thomis and Mr. Priestley, of Bradford. Since this was given, some additional improvements have been made in the apparatus by the makers, Messrs. M. Priestley and Co., Copley Street, Southfield Lane, Bradford, which, to manufacturers of fancy fabrics, will be an undoubted advantage. Where there is a warp face in the material being woven, this Jacquard will prove of great utility. In its action, it has a rising and falling shed, as is the case in an ordinary plain loom. It is especially advantageous where heavy lifts—such as 4 and 1, or 7 and 1 warp face—are to be woven, as by an arrangement of hooks in the uprights, the ends requiring to be up will remain in that position any number of picks; by this means a great economy is effected in the wear and tear of the harness and in the friction upon the warp threads, which must occur when they are raised during each pick. From the annexed illustration, it will be noticed that the uprights,



under the needles, have a hook; when the uprights are lifted, these hooks rest upon a bar, providing they are not required to descend for the next pick. If any of them are required to descend, the blank in the card actuates the uprights and presses them from the bar, this causes them to descend with the grade that is coming down. The machine is specially adapted for weaving worsted coatings, matelasses, worsted fabrics, damasks, cotton goods of various kinds, &c. A decided advantage is secured to those changing their looms from figured to plain goods, as they can twist the warp in, and then weave one or two plain, twill, or figured pieces without inconvenience, and by this plan save the time required when having to prepare a new warp for each cloth, or having to fix extra healds. Messrs. Priestley and Co. guarantee that the apparatus will produce more work and of a better class, in a given time, than the machines in general use, as manufacturers of various fabrics, who have adopted the above, are now in a position to testify. The Jacquard can be seen in operation at the above works.

Mechanism for Leno or Cross Weaving.

In leno or cross weaving, the threads in each splitful, or dent of warp, are drawn partly through ordinary healds or harness and partly through what are known as "doup" healds or harness. In crossing, or lenoing, the two classes of threads meet and cross; the doup thread being lifted to right and left of the plain thread alternately. To effect this crossing in a double lift Jacquard, or Dobby, has hitherto been difficult, because the doup threads are only allowed to come down from the top shed to about mid-shed, and are there taken back by the alternate knife, while the plain threads which should cross with them remain in the bottom shed. An invention relating to the above has been patented, the object of which is to combine with, or add to, the "double lift" Jacquard or Dobby, such a mechanism as will cause the lower warp threads, which require to be crossed, to be lifted from the bottom to mid-shed, or a little higher, to meet and cross with the warp threads of the upper shed which have to descend, such lower shed warp threads, when to be acted upon, being moved from the bottom to mid-shed,

and back again to the bottom shed once during each pick of weft. The harness or healds are tied up in the usual way, arranging that all the "doup" threads are acted upon by one knife or knives, and all the plain threads by another knife or knives. The invention is carried out by adding to, or combining with, the "double lift" Jacquard, or Dobby, another "knife" which is intended to act upon those hooks of the double lift Jacquard or Dobby to which the plain threads of the warp are tied up, which hooks have to be lifted to effect the crossing to the mid-shed or thereabouts. This additional "knife" is arranged and geared up to be worked from the loom to lift the threads at the time and to the height required, and to lower them again once for each pick. The additional knife begins to lift when the "double lift" knives begin their descent and ascent, and the additional knife and the "double lift" knives arrive at mid-shed at about the same time, and the additional knife falls to its lowest position at the time the double lift knives attain their greatest extreme positions at the top and bottom. The additional knife acts, or may act, upon one of such of the double or connected hooks as are required to operate; and this hook is made long enough to extend to the additional knife arranged to work above the double lift knives. Or separate hooks are, or may be, arranged for the additional knife to act upon, each of which hooks is connected with one side of one of the double or connected hooks, which is to be operated by passing through a loop or curl formed in the wire of the hook, and thus leaving both hooks free, so as to be separately acted upon either by the additional knife, or by one or the other of the double lift knives as required. Or a separate Jacquard or Dobby is used, the knife, worked as above described, and arranged so that its hooks are connected by cords, or other attachments, with corresponding hooks, or couplings, to be lifted.

Hydraulic Press for Compressing Wood for Loom Shuttles.

Boxwood has, hitherto, been considered the most suitable for the production of loom shuttles, but in consequence of the enormous rise in the price of this wood, manufacturers have been obliged to endeavour to obtain a material equally uniform and solid, and capable of being highly polished, and, therefore, that would serve the purpose quite as well, at a much lower cost. After repeated trials, it has been proved that several kinds of wood can be rendered sufficiently dense for the purpose by compression. Sir Joseph Whitworth and Co., Manchester, have made a powerful hydraulic press for this purpose, for Mr. Robert Pickles, Albion Mills, Burnley. The press is composed of a strong cast-iron top and bottom, with four steel columns, and steel cylinder with a large ram. In the centre of this ram is fitted a smaller ram with a rectangular head, fitting into a die, which is placed on the top of the large ram. The wood is placed in the die, and a pressure of fourteen tons per square inch is applied. The pressure is then relieved, and the large ram descends. The top pressure block, which fits the die, is then removed, and the small ram rises and pushes the wood out of the top of the disc. So far, only moderately hard woods have been experimented with, but there seems a probability that, in course of time, softer and cheaper timber may, by a greater degree of compression, be made so dense that it will be serviceable for many purposes for which hard wood is now used.

The Fixation of Colours on Cotton by Tannin.

Dr. Otto N. Witt (in the *Chemiker Zeitung*) has dealt with the above process, which, he asserts, is the only one that has been generally adopted for the fixation of basic aniline dyes on cotton. Although various combinations with tannin have been established, still a definite molecular relation between the tannin and the colouring substances has not been, as yet, fully proved to exist. If a solution of any basic colouring substance be mixed with a solution of tannin, precipitation ensues, but it is not complete, and the preparation has not the qualities required by the dyer. To obtain the latter it is necessary to saturate the acids liberated from the colouring substance, which is best effected by the addition of crystal soda. According to J. Koechlin, the best results have been obtained with the following proportions:—For fuchsine—four parts dyestuff, five parts tannin, two parts crystal soda; for violet and bitter almond oil green—four parts dyestuff, five parts tannin, one part crystal soda; for methyl green—four parts dyestuff, ten parts tannin, four parts crystal soda. If the insoluble dye-lac be treated with a solution of tannin, a further quantity of tannin is taken up. In this way the lac is finally dissolved. The fact is thus demonstrated that it is advisable to saturate the fibre with the solution of tannin and complete the dyeing in the dyestuff solution. In cotton printing another peculiarity of tannin lacs

is utilised. These are easily dissolved by many agents, but particularly in acetic acid. For producing any colour the printer mixes colour and tannin in due proportion, adds acetic acid as a dissolvent, thickens with gum tragacanth or starch paste, adds acetate of soda in order to bind the acids liberated by the dyestuff, and finally prints upon the tissue. In the subsequent steaming the acetic acid dissolves the tannin lac, and allows it to penetrate the cotton fibre, leaving it fastened indissolubly on the tissue, while the acetic acid itself is volatilised with the steam. This method only reached perfection by the use of a further agent which would bind any excess of tannin, and by entering the tannin lac would render it less susceptible to the influence of an excess of tannin and other re-agents. Of these supplementary agents none that have been tried possess the requisite qualities in a higher degree than salts of antimony, the manner in which they are used varying considerably between the dyeing and printing processes. The printer finds antimony baths in which an excess of tartar has accumulated very troublesome in the carrying out of his work, and a salt was used as a substitute for tartar, which is described by the *Chemiker Zeitung* as a potassium—antimony oxalate. The interest attaching to this new agent led to its manufacture as an article of commerce. In many receipts now current for printing with basic aniline dyestuffs, an admixture of tartaric acid is recommended. The object of this admixture is to support the dissolvent action of the volatile acetic acid in the steaming with another non-volatile acid, and thus to promote the fibres of the tissue being penetrated with the colouring substance. However useful the admixture of tartaric acid may be for this special purpose, its use is not justifiable when the ensuing treatment with antimony is taken into consideration. The last-named process renders the tissue capable of resisting a warm solution of soap in a satisfactory manner. Of course, the subsequent washing must remove all traces of antimony. The formation of the antimony-tannin-lacs of the basic aniline dyestuffs would be one of the most perfect methods in dyeing and printing if it were possible to impart to the brilliant colourings produced the needful resistance to the sun's rays. As long as this has not been accomplished, preference will naturally be given to less brilliant, but perfectly solid dyes, such as alizarine, ceruleine, and kindred dyeing substances.

Principles of Cotton Openers and Scutchers.

Both openers and scutchers were designed for the purpose of extracting foreign matter, such as dust, stones, seeds, &c., from cotton. Before being imported, cotton usually underwent a great cleaning operation—i.e., ginning—the main object of that process being to separate the fibre from the seeds, to which in its natural state it was firmly attached. The pressure applied in packing the cotton to a slight extent distorted the fibre, and matted it together into flakes. It was for the purpose of loosening these flakes that openers were originally introduced, but now they had been adapted so as to assist in the further process of cleaning the cotton. Whatever might be the variation in construction, there is one common principle running through them—i.e., while the cotton is being slowly passed into the machine, it is struck a rapid blow by the revolving beaters, and dirt is thus driven out from the loosened mass. While in this loose condition, a current of air, induced by a fan, is made to pass through the cotton, and so carry away light particles of dirt through what are known as the dust cages, as well as carrying the cotton from one part of the machine to another for the purpose of either being tumbled out or subjected to another beating operation. The use of an air current is known as the pneumatic principle of openers and scutchers, and is very important. In an opener of the style known as the "Exhaust Opener," the cotton is fed on to a travelling lattice, passing between slowly revolving feed rollers, and is presented to the first cylinder, known as "the porcupine," in a close compact sheet. This porcupine cylinder has on its surface a number of projections, and revolves at a high rate of speed. The cotton is struck by this cylinder, and lashed against a semicircular grid, sending out the heavier dirt. The current of air now carries the cotton forward, and through a series of grated trunks; and as it passes over these grates a further quantity of dirt is deposited. It then very often passes through a number of plain

tin pipes until the conical beater (which is laid horizontally) is reached, when it is further beaten and opened by its passage through this part of the machine, the air current still serving to carry the cotton. After it emerges from this beater, it passes over another set of grates, known as the "leaf-extractor," the bottom of which is formed by a door which is made air tight as far as practicable, so that the fan cannot exhaust air from the underside of the grates, and here the light particles of dirt are mainly deposited. If these grates were not shut off from the fan, the leafy matter could not settle at this point, and this is the only part of the machine where the air current does not more or less pass through. The cotton is then deposited on the dust cages, formed into a sheet again, but in a loose condition, and the work of the opener is completed. But these openers have very frequently a scutcher attached to them, so that the cotton may be formed into a lap, as this saves one wage, and the laps are much better to handle than the loose material. In speaking of the "Combined Opener" and the utilization of air currents, not only for cleaning, but for transporting the cotton through the machine, it may be mentioned that it often serves to connect two portions of the machine which, for convenience, are placed in separate rooms or buildings—the feed part in one building, and the opening and lap part in the other, the cotton often being carried from one to the other through pipes laid over a distance of 300 yards. A mill in America is situated on one bank of a river, and the cotton warehouse on the opposite bank. Though there is a distance of about 1,000 feet between the buildings, all the cotton is carried in pipes over this distance. At Brierfield, near Burnley, cotton is carried a distance of 800 feet, partly underground. A scutcher is only different from an opener in the arrangement of beater. So far as the opening and cleaning are concerned, both are alike, but are not capable of dealing with the same weight of cotton. A good opener will deal with 35,000 lbs. per week, and a scutcher with, say, 10,000 to 12,000 lbs. in the same time. It is necessary, if a good yarn is to be made from the raw material, that the laps should be made uniform in thickness throughout the entire length and breadth. This in some mills is attained by marking out on the lattice definite lengths, and then spreading a given weight of cotton between the marks on the lattice. This system of feeding is known as weighing and measuring, and depends for its efficiency on the care with which the cotton is weighed and afterwards spread over the given area. Another method employed for making even laps is mechanical regulation, by means of which system, if the thickness of the feed be varied, the speed of the feed rollers is varied in exactly the same ratio; that is, if the cotton be fed on the double, the feed rollers turn at one half the rate of speed, and *vice versa*. A very ingenious mechanical arrangement for doing this feeding was patented in Todmorden, and is now in use in all the cotton-spinning countries of the world. There is no doubt this motion is the best mechanical arrangement yet introduced. Another style of cotton spinning and cleaning machine is termed the "Express Card," and is specially adapted for hard bony cottons. Outwardly it has the appearance of an ordinary single-beater scutcher, but in place of a beater is a cylinder covered with short strong pikes, which comb out the fibres, besides extracting a large amount of dirt. The other arrangements of the machine are exactly those of a scutcher. The machine is a great favourite in some parts of the continent, where Indian cottons are almost entirely used, but has not made extensive headway in other countries. The object aimed at by machine makers is to design a machine which will effectively open and clean cotton without injury to the staple. When we consider the character of the cotton fibre, how small and delicate it is, measuring about one-1,200 of an inch diameter, and about 140,000,000 individual fibres in a pound, we can see that it is necessary it should be treated in as easy a manner as possible. The distance between the nip and the feed rollers and the point where the beater strikes should not be less than the average length of staple; the air current should be so strong, and so directed, that after the cotton has been once struck by the beater, it will be carried forward and deposited evenly on the dust cages, or it will be spoiled by being struck repeated blows. The dust cages slowly revolving press the cotton into a loose web, after which it passes through the heavily-weighted compression rollers, and is rolled into a lap for the next machine.—A Paper by James Redman, Todmorden.



Mordants.

(Continued from Page 46.)

Alum, although the earliest and best known mordant, is still most extensively used. It is generally met with in a crystalline form, and the only impurity to which it is subject in this state is iron. To detect the presence of iron, to the solution of a piece of alum add a few drops of a solution of tannin, and if iron be present, this addition will cause a black colouration, or a mixture of the red and yellow prussiates of potash (ferrocyanide and ferricyanide of potassium), under similar circumstances, will immediately produce a blue precipitate, but if this be allowed to stand long, say an hour, a blue colouration will follow, even though the alum be pure. Iron may also be detected by adding to the saturated solution of alum two drops of pure nitric acid, then boil to change the iron into the state of a peroxide salt, and expel the remainder of nitric acid from the liquid, and add a drop or two of a solution of sulphocyanide of potassium, when, if iron be present, a red colour will be produced. Some alum has a faint reddish or rusty colour, arising from iron in the state of insoluble peroxide. Samples of this kind may safely be used unless, when tested, they are found to contain iron in a soluble condition also. Ground alum should be avoided as it may be mixed with common salt, sulphate of soda, &c., which not only reduce its strength, but tend to introduce iron. Common alum exists under two distinct forms—potash alum and ammonia alum. Potash alum contains 10 per cent. of alumina, 33 per cent. of sulphuric acid, and 45 per cent. of water; three-fourths of the water are driven off at 140° Fahr. One part of alum, at 54° Fahr., dissolves in 13 parts of water, at 122° Fahr., in two parts, and at 189° Fahr., in 0.06 of a part. Ammonia alum is somewhat stronger than potash alum. It contains 11½ per cent. of alumina, 35 per cent. of sulphuric acid, and 49 per cent. of water. Ammonia alum can be easily distinguished from potash alum by the strong smell of ammonia which it throws off when heated along with a solution of caustic soda. In many cases it is a matter of no consequence whether potash or ammonia alum be used, but the latter is not fit for the preparation of alkaline pink mordant. If any iron be present, it interferes with its uses as a mordant in dyeing bright colours, and in the manufacture of pigments. As alum must be boiled before it will readily part with its alumina, it is more commonly used for wool dyeing than for cotton, but it is made serviceable for the latter by conversion into "basic alum." This is made, generally as required, by the careful addition of carbonate of potash or of soda to a solution of alum, as long as the precipitate formed is re-dissolved on stirring. This part of the sulphuric acid is neutralised, and the alumina, being held less firmly in solution, is more easily deposited on the fibre. Sulphate of alumina, called also patent alum, concentrated alum, cake alum, and sometimes consecrated alum, is composed of sulphuric acid, saturated with alumina. It contains 15 per cent. of alumina, 35 per cent. of sulphuric acid, and 48 per cent. of water. It dissolves in twice its weight of water. But in spite of the superior strength and more ready solubility of patent alum, it has not succeeded, for reasons to be mentioned, in replacing the common alum in dyeing and printing. Common alum is a perfectly definite crystalline compound, liable to contain certain easily detected impurities, whilst in these preparations the amount of water, and also the relative proportions of sulphuric acid and alumina are variable, and as the amount of fluctuation cannot be detected without a proper analysis, dyers have, therefore, until comparatively recently, looked upon it with suspicion. Another objection to the use of concentrated alum is the absence of sulphate of potash, which, though not a mordant, modifies the action of alumina, and causes results which are sometimes desirable, but the same effects may be produced by the use of sulphate of soda in the dye beck along with sulphate of alumina. It is not of much use in cotton dyeing and printing, though in preparing other salts

of alumina, by double decompositions, such as red liquor, it is very serviceable. The chief impurity to which it is liable is iron, and the means adopted for the detection of the latter in alum are also employed in the cake alum. Acetate of alumina, called also red liquor, red mordant, and pyrolignite of alumina, is the most important of the alum mordants for the use of the cotton dyer and tissue printers. The "red liquor" is of a yellowish or brownish colour, a sweet astringent taste, a tarry smell, and is prepared, sold and used in the liquid form. It has a specific gravity varying from 8° to 24° of Twaddell's scale. This mordant is a combination of acetic acid and alumina. It is generally prepared by double decomposition, some soluble acetate, often that of lead (sugar of lead), or of lime, is mixed in solution with alum or sulphate of alumina. The lead or lime is precipitated in combination with the sulphuric acid, whilst the alumina unites with the acetic acid, and remains in solution. The proportions used vary according to the particular purpose in view, or to the ideas of the compounder. The best results are gained by the use of proportions which are not exactly equivalent, and which do not therefore mutually decompose each other entirely. About three-fourths of the acetate of lead or of lime required to produce a pure acetate of alumina are mostly used, therefore a portion of alum or sulphate of alumina remains undecomposed. An excess of acetate of lead is seldom recommended. Some ingredients, such as chalk, carbonate of soda crystals, common salt, acetic acid, nitrate of zinc, and acetate of copper are sometimes added. Carbonate of soda and chalk have the effect of neutralizing part of the acid, and thus enabling the alumina to be more readily deposited on the fibre, but others, such as commonsalt, can have little effect beyond raising the specific gravity of the liquid. The quality of a sample or its adaptability to any special purpose is best decided by practical tests. Hyposulphite of alumina has often been recommended as a substitute for red liquor, but in practice it has not been found to possess superior advantages, and has not, therefore, come into extensive use. It is prepared thus—dissolve 9 lbs. 1¼ ozs. sulphate of alumina, and 10 lbs. 10 ozs. hyposulphite of lime in water separately, mix the solutions, allow the mixture to settle, or filter it through a thick flannel and use the clear liquid. Aluminate of soda, known also as pink mordant, was formerly prepared in an impure state by adding to a solution of common alum or sulphate of alumina caustic soda in excess, and boiling till the precipitate which first appeared was re-dissolved. It may now be bought in a solid condition and tolerably pure, containing about 50 per cent. of alumina. It dissolves readily in water, but should be kept as much as possible from exposure to the air. It is used by printers as a mordant for pinks, the cloth being run through a solution of sal-ammoniac, chloride of zinc, &c., to fix the alumina on the fibre. This salt is capable, when properly treated, of producing in dyeing every effect that can be obtained by the use of alum, and in addition, many others which alum does not yield. It is also capable, though of an alkaline nature, of depositing its base, and consequently of fixing colours upon wool.

(To be continued.)

The International Inventions Exhibition.



THE inauguration of the International Inventions Exhibition took place on Monday, the 4th inst., in the Conservatory of the Albert Hall, London. The ceremony was performed by the Prince of Wales. Amongst those present to receive His Royal Highness were the Archbishop of York, the Marquis of Lorne, the Turkish, German, Russian, Italian, and other Ambassadors, Sir Charles Dilke, M.P., the Siamese Envoys, Lord A. Churchill, Mr. A. J. Mundella, M.P., Mr. Trevelyan, M.P., Sir Lyon Playfair, M.P., and others. The Prince of Wales was accompanied by the Princess of Wales, the three young Princesses, the Duke and Duchess of Edinburgh, Her Royal Highness the Princess Christian, and the Duke of Cambridge; they were received by the Chairman of the Executive Committee (Sir F. Bramwell), and conducted through the building to the Conservatory. After their Royal Highnesses had been conducted to the dais by Lord Granville and Sir W. Harcourt, and others, the Chairman

read the address of the Executive Committee. Referring to the origin of the exhibition, and to the various nations who had sent exhibits, he expressed regret that the Government of the United States had not felt itself in a position to appoint a Commission to represent it. He stated that a Guarantee fund of £87,000 had been raised, in place of £50,000, as at first proposed, and that sums were still being added to that amount. He remarked that through the co-operation of the railway companies, the Council had been enabled to increase the facilities of access for visitors, the chief of which was the subway from the South Kensington station into the exhibition. He referred to the interest which His Royal Highness had taken in the construction of this subway, not only out of regard to the comfort of the visitors to the exhibition, but also on account of his earnest desire to prevent the repetition of the annoyances caused last year to the inhabitants of the Cromwell and Exhibition Roads by the numbers of people who continually thronged them.

The Prince of Wales, in replying to the report, said:—"I have listened to the report with much pleasure, and I fully appreciate the labours you have bestowed on this undertaking. At the closing of the International Fisheries Exhibition, I took the opportunity of expressing a hope that an International Inventions Exhibition might be held in these buildings during the present year, and I am sincerely gratified to find that this hope has been realised. The scope of this exhibition is indeed vast, and I can readily comprehend the difficulties which must have beset you and the committee of advice in your endeavours to secure adequate representation for each branch of industry. I have observed with much pleasure that the classification originally adopted has been made the practical basis of the allotment of space in the exhibition, and that the exhibits in each group have, as far as possible, been placed together. I am convinced that by following this plan you have materially increased the educational value of the exhibition. I readily echo the sentiments of gratitude which you have expressed for the invaluable aid rendered by the guarantors; and I join with you in welcoming the representatives of those foreign countries who are present here to-day." After referring to the devotion of a special section to music, the Prince continued:—"I am sincerely pleased at the completion of an undertaking which has from its commencement had my cordial sympathy. I refer to the subway, which I had the pleasure of declaring open on Saturday last; and I feel sure that this new access to the exhibition will prove not only a great boon to visitors, but also, in the manner in which you have indicated, a relief to the inhabitants of this district. In congratulating you upon the results of your labours up to the present time, I trust that your efforts will be rewarded by a success as great as that which attended the two previous exhibitions. I now declare this exhibition open." Three cheers for their Royal Highnesses were then called for and given by the audience, and the Royal party then walked through the building, and shortly afterwards left.

ODDS AND ENDS.

The principal merchants of Alexandria intend to present a congratulatory address to Colonel Scott-Moncrieff, under-secretary for public works, for the satisfactory cotton prospects, due to the system of irrigation designed and carried out by him.

Kongs-red is a new dye-stuff of the Azo class, with which cotton can be dyed without being mordanted first. This would be the first aniline dye for dyeing cotton directly; it resembles turkey-red oil, but it is not as fast as alizarine.

The Antwerp Exhibition, which was opened on Saturday, the 2nd inst., owes its origin entirely to private enterprise, and as none of the financial proceeds are to benefit any of the local charities, the scheme takes the character of a purely commercial undertaking, and the projectors have planned that, when all the exhibits are arranged, the show shall be one of the first rank. Among English exhibitors may be mentioned: Samuel Brookes, textile machinery; Kendall and Gent, machine tools; T. Bradford and Co., washing machines; C. Calvert and Co., coal-tar products, soap, disinfectants, &c.; Ralph Hall and Co., samples of leather belting, with improved methods of splicing and make, &c.; Baldwin and Walker, Halifax, yarns and wool; and T. and J. Taylor, Oldham, gas regulators, meters, &c.

Messrs. Benjamin Woodward and Co. (Limited), Kidderminster, have just finished a splendid carpet for the Inventories. It is a new fabric, and the patent for it has been secured. They call it the Loyal Axminster, and they claim effectiveness in design and durability as its principal features. It is velvet pile, a large number of colours can be woven at once. The top of the carpet is composed of woollen and the back of jute.

We are pleased to see that the chemical societies are opposing the Rivers Pollution Bill, which is to be brought forward the present session in the Commons. The idea of compelling bleachers and dyers to return their water to the rivers as pure as when they took it out is preposterous. It must mean the certain destruction of the textile colouring industries. It will not do to let the House of Commons, with its absolute ignorance of chemical subjects, pass this Utopian measure. We counsel united action by the trades affected.

THE GAZETTE.

Adjudications of Bankruptcy.

Airey, E., G. Airey, and B. A. Airey (trading as Airey, Sons and Co.), silk spinners, and G. Airey, and B. A. Airey (trading as B. A. Airey and Co.), silk merchants, Victoria Mills, Brighouse, Yorkshire.
Heap, J. W., Brook's Yard, Market Street, Huddersfield, woollen merchant.
Schofield, J. H., and W. H. Illingworth (trading as Schofield and Illingworth), Troy Mills, Horsforth, Guiseley, Yorkshire, woollen manufacturers.

Bills of Sale.

	£	s.	d.
Beesley, W. H., River Street, Blackburn, beam warper	80	0	0
Pickles, J., and J. Shuttleworth, Devonshire Mills, Pitt Street, Keighley, commission weavers	400	0	0
Robinson, W. R., Greenfield-in-Saddleworth, cotton spinner	400	0	0
Robinson, J., and W. R. Robinson, Greenfield-in-Saddleworth, S. Robinson, Spring Meadow, Saddleworth, H. Robinson, and E. Robinson, Greenfield-in-Saddleworth	400	0	0
Whitehurst, E., West Bond Street, Macclesfield, silk dyer	120	0	0 ab.s.

Dissolutions of Partnership.

Barnes, C. T., and A. Armitage, Albany Mills, Frith Street, Huddersfield, woollen manufacturers.
Downs, W., and J. Roberts, Manchester, cotton and cotton waste dealers.
Halstead, H. and S. Halstead, 23, Dale Street, Bradford, woolstaplers.
Jubb, J. and J. J. Jubb, Batley, Yorkshire, shoddy manufacturers.
Rouse, J. F., W. Rouse, F. Rouse, and H. Rouse, North Brook Street Mills, Bradford, Yorkshire, worsted spinners and manufacturers.
Storer, G., and G. Pickering, 22, Erskine Street, Leicester, elastic web manufacturers.
Stretton, S. D., and W. G. Hutchinson, Leicester, manufacturers of hosiery.
Upton, J., T. Tilbrook, and G. W. Richardson, Wool Exchange, Coleman Street, London, merchants.
Wadsworth, J. B., and E. Wadsworth, Park Mill, Macclesfield, Cheshire, silk braid manufacturers.

PATENTS.

Applications for Letters Patent.

Automatic sight-feed lubricator. J. Etherington, London.	20th April 4,864
Apparatus applicable to spindles of ring spinning and doubling machines. B. Fallows, Manchester.	24th April 5,081
Actuating jacquard machines. W. Hardaker, London.	25th April 5,141
Application of automatic pulleys to the strapping of mules and twiners. S. Broadbent and J. Bamford, Oldham.	27th April 5,161
Belt shifter and replacer. A. Anderson, Glasgow.	7th April 4,292
Belt fastener. J. Ashton and J. Rutledge, London.	7th April 4,312
Braiding, ropemaking, and other flyer spindles. G. F. James, London.	8th April 4,352
Break for arresting rotatory motions, more particularly applicable to looms, &c. L. Fish, London.	11th April 4,493
Cardigan jackets, &c. B. W. Russell and T. Huxley, London.	28th Mar. 3,974
Cloth drying machines. G. F. Redfern, London.	7th April 4,311
Carding engines. R. Mellor, Manchester.	8th April 4,329
Cutting fustians, velvets, &c. J. Broome, J. Hallworth, and C. W. Foster, Manchester.	10th April 4,434
Carding machines and machines for tearing and opening fibrous substances. W. Tatham, Rochdale.	10th April 4,439
Cutting or severing double pile fabrics, woven face to face, and the manufacture of double pile fabrics to facilitate the cutting operations. S. C. Lister and J. Reixach, Bradford.	13th April 4,561

Combing machines. G. Wilkinson, London.	14th April 4,588
Cutting pile fabrics. T. Millward, London.	16th April 4,722
Carding engines. R. Curtis and A. Holden, Manchester.	21st April 4,894
Connecting together the ends of driving cords or bands. G. F. Redfern, London.	27th April 5,192
Drawing, spinning, doubling or twisting yarn or thread. D. Morrison, Glasgow.	27th Mar. 3,927
Dyeing cotton and other vegetable fibres and yarns, and fabrics composed thereof. J. Barnes, Manchester.	9th April 4,284
Driving gear for spindles, spinning machinery, and the like by friction. J. J. and G. P. Jaques and W. Holliday, Leeds.	13th April 4,513
Dyeing and rinsing wool, cotton, rags, &c. H. Webster, Halifax.	15th April 4,626
Drawing cans for cotton, &c. J. Whitworth, London.	18th April 4,804
Expanding roller for widening or tentering woven or other fabrics during the process of bleaching, dyeing, finishing, &c. J. B. Horrocks, Manchester.	18th April 4,794
Embroidering machines. S. Louis, London.	24th April 5,128
Finishing pile fabrics. S. C. Lister and J. Reixach, Bradford.	13th April 4,560
Finishing cotton fabrics and apparatus therefor. G. W. C. Kirkham, London.	14th April 4,593
Forcing down the shuttle boxes of drop-box looms. C. Bedford, Halifax.	21st April 4,903
Frames or machines for cutting pile fabrics. J. Hallworth and G. Roger, London.	24th April 5,095
Flyers for spinning and doubling fibres. A. W. J. Morris, Halifax.	25th April 5,142
Grids or under castings of carding engines. D. Hall and J. H. Kay, Manchester.	18th April 4,790
Heat resisting fabrics. G. P. Chiles, London.	1st April 4,146
Knives for cutting pile fabrics. J. J. Mann, Salford.	25th April 5,154
Lubricators. J. H. Johnson, London.	30th Mar. 4,022
Lubricators. J. E. Walsh, Halifax.	7th April 4,263
Loose reed motions, picking shafts and sticks, and picking straps of looms. C. Thompson, Halifax.	9th April 4,445
Looms for weaving and cutting pile fabrics. W. R. Lake, London.	17th April 4,766
Looms for weaving pile fabrics. W. R. Lake, London.	17th April 4,767
Looms for weaving and cutting pile fabrics. W. R. Lake, London.	17th April 4,768
Looms. W. Smith, Manchester.	18th April 4,792
Lowering the shuttle boxes of looms. H. Broadbent and W. Holroyd, Halifax.	20th April 4,850
Letting-off motion for looms. E. Barlow, Patricroft.	21st April 4,900
Lace machines. J. Jardine, London.	21st April 4,960
Looms. W. R. Lake, London.	22nd April 5,011
Looms for double pile fabrics. D. Leggett and W. Ackroyd, Halifax.	24th April 5,079
Make of beetles for beetling or finishing cloth. J. McKean, Castleblaney.	28th Mar. 3,964
Measuring, hooking, marking and counting webs for manufacture of handkerchiefs, &c. J. Hamilton and R. Woods, London.	7th April 4,318
Mules for spinning fibres. W. Houghton and E. Knowles, Halifax.	20th April 4,848
Mandozer catch motion for spinning mules. J. Eckersley and R. Turner, Preston.	22nd April 4,969
Noble's or other circular combs for wool, &c. J. Ainsworth, Bradford.	21st April 4,907
Operating the healds of looms. E. O. Taylor and D. Kenyon, Halifax.	1st April 4,103
Oiling and damping yarn. S. J. Anderson-Laing, Glasgow.	7th April 4,291
Pulleys and drums. R. R. Gubbins, New Cross, Kent.	27th Mar. 3,920
Pulleys and drums. A. B. Perkins, London.	30th Mar. 4,030
Pickers in looms. J. Gabbott, Halifax.	1st April 4,107
Preparing cotton, &c. W. and W. Lord, Manchester.	7th April 4,221
Picking motion of looms. J. Cottrill, and W. Brown, Manchester.	8th April 4,328
Pickers for looms. E. Edwards, London.	8th April 4,355
Pickers for looms. W. Fairweather, Glasgow.	20th April 4,871
Production of designs on textile and other fabrics or surfaces. J. Hebblethwaite and E. Holt, Manchester.	22nd April 4,979
Packing and lubricating piston rods and other working parts. C. Holliday, London.	22nd April 5,000
Reeling machines. W. Cunningham, Glasgow.	28th Mar. 3,957
Ring and traveller for spinning machines. W. R. Lake, London.	31st Mar. 4,091
Ring spinning and doubling. G. Shaw, London.	7th April 4,253
Ring spinning machinery. B. Cohnen, Manchester.	20th April 4,844
Securing card clothing to the bars of carding engine flats, and for protecting the edges of such clothing. N. W. Whiteley, F. W. Thomson, and H. Hoyle, Halifax.	27th Mar. 3,901
Stretching, dressing and finishing lace, &c. L. Lindley, London.	28th Mar. 3,966
Sharpening the knives of looms used for double woven piled fabrics. E. Greaves, Bradford.	30th Mar. 4,003

Scouring or removing the oil from vegetable and animal substances by infusorial earth and heat. L. A. Groth, London.	28th Mar. 3,977
Shuttle guards. N. Drake and S. Feather, London.	9th April 4,393
Self-lubricating bearings for shafts, loose pulleys and other rotating bodies. J. Greig, jun., Glasgow.	8th April 4,338
Sectional warping and beaming machines. J. H. Stott and J. Whitehead, Manchester.	13th April 4,546
Spindles. H. J. Haddan, London.	14th April 4,610
Sight-feed or transparent lubricators. A. Bradshaw, Halifax.	15th April 4,625
Spindle flyers for spinning, twisting, and doubling. R. Turpie, Manchester.	7th April 4,852
Slubbing, roving, spinning and doubling cotton, &c. T. S. Whitworth, Manchester.	20th April 4,863
Spinning, twisting, and winding. A. M. Clarke, London.	23rd April 5,015
Stop motions for winding and doubling frames. A. H. Dixon and W. J. Gradwell, Manchester.	25th April 5,134
Slubbing, roving, spinning, doubling and winding fibrous materials. S. A. Luke, London.	25th April 5,156
Thread breaking attachment for doubling and twisting machines. A. M. Clark, London.	27th Mar. 3,940
Treatment of plants of the nettle species. A. E. Newman, London.	1st April 4,118
Twist lace fabrics and apparatus. J. Caxon, London.	7th April 4,212
Taking-up bands in spinning and twisting fibres, and other machinery. D. and S. Ledray, and R. C. Hudson, Halifax.	18th April 4,805
Uniting the ends of driving belts or bands. S. Rowbottom, London.	27th Mar. 3,939
Washing or scouring wool. W. Cook, London.	30th Mar. 4,028
Washing, chloring, scouring, soaping, dunging, and dyeing woven fabrics. J. Farmer, Manchester.	2nd April 4,148
Woven bags, sacks, &c. J. H. Kenyon, Manchester.	7th April 4,220
Washing machinery applicable to milling, fulling, &c. T. White, Leeds.	7th April 4,259
Weaving pile fabrics. W. Peers, Manchester.	8th April 4,321
Wet spinning frames. A. W. L. Reddie, London.	8th April 4,350
Winding machines. H. J. Haddan, London.	10th April 4,455
Woven bags or pockets. F. Baynes and J. Whalley, Manchester.	16th April 4,689
Warp lace machines. A. Dawson and E. Smith, London.	22nd April 4,973
Weaving ornamental fabrics. A. H. Lee, Manchester.	23rd April 5,028

Patents Sealed.

3,762	6,175	6,495	6,526	6,892	687	1,877
4,054	4,678	4,681	4,688	5,168	5,216	5,235
5,274	5,469	5,637	5,741	5,901	7,722	4,769
5,398	5,471	5,538	5,700	5,853	6,000	7,729
8,756	16,801	2,846	3,302	4,914	5,944	6,277
16,708	4,616	6,020	6,043	6,084	6,120	6,203
6,272	6,289	6,291	7,721	14,100	4,758	6,095
6,148	6,150	7,150	3,696	5,512	6,451	6,625
6,783	6,788	7,787	2,457	5,532	5,659	6,473
6,674	6,748	3,226	6,135	6,449	6,837	7,889
11,528	14,824	471	488			

Complete Specifications Accepted.

8,158	9,025	9,458	9,518	666	3,881	6,048
9,002	9,162	9,263	9,312	9,466	9,880	14,735
496	8,484	2,246	2,801	2,819	9,221	9,329
9,373	9,408	9,428	9,582	11,458	551	2,979
7,709	9,273	9,570	12,490	6,635	9,513	9,614
9,632	9,944	10,456	10,565	14,481	15,245	3,220
3,352	7,900	9,517	9,637	11,583	9,301	9,638
9,784	9,808	9,941	9,970	15,819	3,434	3,573
3,601	3,655	7,896	9,231	9,495	9,740	9,989
10,022	2,019	3,699	3,734	3,748	3,788	

Provisional Specifications Accepted.

3,124	3,149	3,170	3,457	3,864	4,221	4,253
4,255	4,284	4,329	4,350	4,367	4,434	4,546
2,322	2,598	3,011	3,051	3,159	3,161	3,188
3,197	3,222	3,250	3,360	3,450	3,491	3,504
3,561	2,106	2,248	3,269	3,361	3,363	3,411
3,580	3,605	15,598	2,908	2,954	3,144	3,146
3,275	3,277	3,545	3,606	3,638	3,825	10,456
2,845	3,624	3,819	2,757	3,063	3,365	3,487
3,759	3,863	3,636	3,698	3,927	3,940	3,957
3,966	2,498	3,219	3,725	3,920	4,091	4,096
4,103	4,212	4,321	4,328	3,437	3,538	3,555
3,939	4,028	4,107	4,148	4,291	4,311	4,355
4,393	4,445					

The Journal of Fabrics

AND

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Notices.

The Half-Yearly Subscription—payable in advance—including home postage, is 3s. 6d., Cheques and Post Office-Orders to be made payable to H. & R. T. LORD, 10, Ann Place, Little Horton Lane, Bradford, Yorkshire.

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Readers are invited to forward items of interest to the Trades concerned.

The Proprietors will feel greatly obliged if any of their readers, in making enquiries of, or opening accounts with, Advertisers in this paper, will kindly mention the *Journal of Fabrics and Textile Industries* as the source from whence they obtained their information.



Trade Marks in the Textile Trades.

THE NEW ACT OF 1883.



DISTINGUISHING trade marks of a taking character are often of vital consequence in the textile trades, as in some markets, notably the East, a well-known brand will hold almost exclusive possession of it in the case of certain descriptions of goods, and any other can only be sold with extreme difficulty, even though better value may be given. This is perfectly well understood in Manchester, and the unsatisfactory working of the New Act, in many essential particulars, gave rise to the recent

deputation from thence, representing the Manchester Chamber of Commerce, waiting upon Mr. Chamberlain, the President of the Board of Trade, on the subject of trade marks, particularly in the cotton trade. Mr. Slagg, M.P., who introduced the deputation, in the course of his remarks, stated that the trade marks of Manchester constituted more than half of those throughout the whole country, and they now found that the working of the Manchester office, under the new conditions, was very unsatisfactory, especially with respect to the delay in the registration and examination of their marks, and that efficient officers should be stationed in Manchester, and the office fully equipped with examples for the purposes of comparison, inquiry, and examination. It must be borne in mind that the Trade Marks Acts, 1875-7, are now repealed, and replaced by the

Patents Act, 1883, 46 and 47 Vic., c. 57, according to legal description, which contains a wider and more comprehensive definition of a trade mark, but in other respects substantially identical (so far as concerns the acquisition of trade marks), with the repealed Acts, and in the printed "Instructions to persons who wish to register trade marks," under Clause 38, it is stated that "For the convenience of merchants and manufacturers engaged in the cotton trade, and for the purpose of facilitating the recording of trade marks, used in respect of cotton goods, an office will be opened at 48, Royal Exchange, Manchester, where searches will be made on payment of 1s. for each quarter of an hour for the marks in classes of textiles, from Class 23 to Class 35." As these classes include all the textile fabrics, it may be as well to give them under their separate headings :—

Class 23 embraces cotton yarn and thread, such as sewing cotton, on spools or reels.

Class 24.—Cotton piece goods of all kinds, such as cotton shirtings, long-cloth, &c.

Class 25.—Cotton goods not included in Classes 23, 24, or 38, such as cotton lace, cotton braids, cotton tapes.

Class 26.—Linen and hemp yarn and thread.

Class 27.—Linen and hemp piece goods.

Class 28.—Linen and hemp goods not included in Classes 26, 27, and 50.

Class 29.—Jute yarns and tissues, and other articles made of jute, not included in Class 50.

Class 30.—Silk, spun, thrown, or sewing.

Class 31.—Silk piece goods.

Class 32.—Other silk goods not included in Classes 30 and 31.

Class 33.—Yarns of wool, worsted, or hair.

Class 34.—Cloths and stuffs of wool, worsted, or hair.

Class 35.—Woollen, and worsted, and hair goods, not included in Classes 33 and 34.

Class 38 (which is an important one).—Articles of clothing, such as hats of all kinds, caps and bonnets, hosiery, gloves, boots and shoes, other ready-made clothing.

Manchester, as will have been seen, is thus privileged by having an office in its midst devoted to its own special interests, and the gist of the application made by the deputation to the President of the Board of Trade was that not any alteration should be made in the actual registration, but that all applications prior to registration should be fully dealt with in Manchester, one of the speakers (Mr. C. Bailey) remarking that the Chamber of Commerce desired to press upon the attention of Mr. Chamberlain in his official capacity the necessity which existed for the personal hearing in Manchester of merchants, who, while not being specially affected by the registration of a proposed mark, would like the opportunity of access to the registrar when marks were in process of registration. The cost of appearing personally before the registrar in London in support of applications to register involved an expenditure of time which few merchants could spare, and, in addition, it very largely increased the cost of registration. In substance, the President of the Board of Trade replied that he could not consider so important a change as was proposed without reference also to the probability of other trades and towns demanding a similar privilege, and he looked almost with alarm on the results which would follow; but, short of appointing a committee of experts, he would be quite willing to put the Manchester office on the same footing that it occupied previous to the Act of 1883. He thought, however, that a final supervision in the central department must be reserved; and no other decision could be very well arrived at, it will be commonly thought, for many other places that are particularly interested in fancy designs, as Nottingham, might claim the same privilege. Under the old Act a great number of Nottingham designs used to be registered under the heading of Class 13, which could be done for 5s. at the old office opposite the Horse Guards; and the general working of the New Act, embracing as it does the whole law of trade marks, registration of designs and patents, has been pronounced not to work well in many particulars, and though the expenses are lessened materially in some ways, they are increased in others, as in that of registration of a great number of separate examples under one class.

When paraffine is thoroughly mixed with linseed oil, cast into small blocks, and allowed to cool, it may be used to make any fabric, as cloth, felt and leather, water-proof by rubbing it with such a block, and ironing afterward to equalize the distribution of the material in the pores. If too much be not put on, the material may be made to be only impervious to water, but not to air, as the very small greasy pores repel the water but not the air.

Co-operation and the Woollen Trade.



THE Seventeenth Annual Congress of the Central Co-operative Board, opened on Monday the 25th ultimo. A paper was read by Mr. T. W. Fenton, President of the Dewsbury Pioneers' Industrial Society, on "The Difficulties in the way of Productive Co-operation." The following is the substance of the paper:—"During the two last Congresses which I have attended, my impressions have been that distributive co-operation, speaking generally, had made satisfactory progress, but productive co-operation had not. Productive co-operation, speaking generally, cannot be worked on the same lines as distributive, because the conditions and circumstances are altogether different. Take, for instance, a co-operative woollen cloth manufactory, started for the production of varied qualities of fine cloths, in any district you may choose. It does not and cannot find the consumers of its products in the locality where the factory is situated. There are no interested volunteers banded together, within a radius of two or three miles, honourably pledged to consume its commodities, as in the case of a distributive concern. Productive co-operation has to go out into the country and the world, either directly or indirectly, and fight the battle of competition with private producers, both home and foreign, give credit and risk losses; hence the greater difficulty of success than has to be encountered by those who engage in distribution. One difficulty that has appeared to me to stand in the way of productive co-operation, in the great staple trades of our country, is the failure to secure intelligent practical governing bodies of men to conduct the executive work. I have heard some of the Lancashire delegates chuckle over their successes in yarn-spinning, but yarn is a semi-raw material, the smallest part of a branch of industry, and the very essence of simplicity. With a woollen factory it is quite different. If you could secure a body of men from among members who knew and understood the various branches of work practically, they would be of use, but others could be of no real use, while they might hinder, thwart, paralyse, and ultimately destroy the business, without intending to do so. How, then, is co-operative production to overcome the difficulties which stand in the way of success? I will tell you how I think they can be overcome. The members must select an honest, intelligent, practical manager—a man born and bred, so to speak, in the business; the directors must be practical men also, understanding the different branches of labour carried on in the business. Where such a body of men cannot be secured, the difficulties might be got over by a self-imposed limitation of the powers of the directors of a concern who, after having chosen a manager, might say to him: 'Here is our mill, filled with the best known machinery, and here is an ample amount of capital; take all into your hands, and manage the concern for twelve months, or from year to year, without our intervention. We will see that proper accounts of all transactions are kept, give you our advice when you ask for it, receive your reports from time to time, and judge you by the results of the business. If you fail to secure us steady employment and a good dividend, we will dismiss you; but if you succeed, we will erect a marble tablet in the board-room in honour of your memory and faithful services.' There is one view of co-operative production that I ought to place before you here. I do not see how it can ever excel private production when the conditions are equal. A private firm of born and bred business men, possessing the best machinery, ample capital, and absolute control, cannot be beaten by co-operative production. Buying and selling are important parts of any business, especially a productive business. If a good article be bought for cash at the lowest market price there is a fair chance for a small profit, if not a large one; but if carelessness or incapacity lurk in the department then difficulty follows a dear purchase even to the end. Co-operation always aims at a profit, and with distributive co-operation this is quite an easy matter. But with productive co-operation it is very different. The time that may elapse between the purchase of raw material and the finishing of fabrics from it may bring a change either in fashion or price, or a mistake may be made, so that a profit cannot be realised. In such cases one cannot act on principle. Expediency steps in with the private manufacturer; he says to himself, 'the first loss is the best,' and he sells. This ought to be so in co-operative production, but when a miscellaneous body of men rule and act on the hard lines of principle the manager is hampered, and the concern suffers by holding back stock and in other ways which the holding of bad stock brings in its train. In regard to foreign competition and foreign tariffs, I submit that universal free foreign competition in manufactures in this country, without the same be allowed in other countries, is not just or fair towards co-operative production, as it is not just towards private production, or to the British workman engaged therein, and I hold that neither can be endured for a much longer period under present conditions, nor sustained at all except by some changes which no public man would like to advocate before the people. In the year 1879 the German Parliament passed a new Tariff Bill, which came into operation on the 1st of January, 1880, and which increased the duty on woollen cloths or fabrics from £1 10s. 6d. per cwt. to £3 8s. 7d. per cwt. The effect this increased duty has had upon our woollen trade will be seen from the fact that whilst in 1879 woollen fabrics amounting in value to £2,038,510 were exported from England to Germany, in 1883 the exports of woollen goods were only £953,156, a decrease of £1,085,354. The decreased amount would of itself employ twenty-one woollen factories, with a turnover of £50,000 per year each. Does not a change like this tend to explain, as far as it affects us, the depression in manufactures which has hung about us for so long a time? Does it not explain why a number of Yorkshire manufacturers have gone to establish themselves in Germany, to make within her borders goods which were formerly made here and sent there? The duty as now levied will vary, upon the value of woollens, from 20 to 50 and 60 per cent. It is noteworthy that the decrease in our exports of woollens to Germany did not bring a corresponding decrease in the exports of woollens from Germany to England. I now pass on to call your attention to a very striking feature in our trade with France, which to my

mind has a vital bearing on both private and co-operative production. The French are our next door neighbours, and very keen competitors for the sale of their manufactures in our markets. Ten articles of industry that are common to both countries are:—Artificial flowers, cotton fabrics, leather manufactures, in the shape of gloves, boots, and shoes; musical instruments, silk fabrics, sugar manufactures, paper manufactures, woollen fabrics, glass manufactures, and clocks. In 1883 the total imports of these articles from France were £16,338,920, and the total exports from England to France £5,145,441, showing a balance against England of £11,068,510. If this balance could be spent at home on similar articles of English manufacture, it would employ no fewer than 221 factories and workshops, with a turnover of £50,000 per year each. This brings me to the subject of the hours of labour at home and on the continent of Europe, also to that of wages, &c., and the cost of carriage, which, as we shall see, form a very important element in the cost of production. In France and on the Continent, generally, the hours of labour among textiles are seventy-two per week, as against fifty-six and a-half in England. The cost of carriage is as little, and in some cases less per cwt. from some of the chief manufacturing centres of France into London than it is from Yorkshire towns into London. Roubaix is sometimes called the Bradford of France, and its woollen fabrics can be delivered in London at about 1s. 8d. per cwt. From Lille to London the cost is about 1s. 11d. per cwt.; from Paris to London, 2s. 3d. per cwt. The cost from Dewsbury and other Yorkshire towns to London is 2s. 2d. per cwt. Those who produce at the lowest rate win in the race of competition, whether they be private firms, co-operative producers, or foreign manufacturers. This applies to our markets, but it does not apply to the markets of France, because the French levy duties on our woollens varying from 10 to 40 per cent. So that you see co-operative production, under present conditions, has neither a fair chance at home, nor in France, nor in any other country. What I have said of the woollen industry of our country may be said of almost every other industry. I do not for one moment advocate long hours and low wages in order to surmount the difficulties. I simply point out that these hours and wages have to be met and contended against. I am sometimes amused to hear men talk of over-production, and of limiting the hours of labour in England to eight per day as a remedy for bad trade. It is quite clear that such men have never comprehended the outside influences which are at work, that would make such a remedy far worse than the disease we now labour under. Then, what is needed to meet the changes of the times? We admit annually about £45,000,000 worth of foreign goods, fully manufactured, absolutely free. Why not make them pay 15 or 20 per cent. duty? What would it signify if such a duty shut half of them out? It would simply mean that we could make more at home, and get revenue from the remainder. Why should Englishmen load themselves with internal taxation, and let the foreigner go free? The Government wants more money year by year; then, make the foreigner pay his share, just as he makes us. I beg of those who hear me to give earnest attention to this manifold question, to press it everywhere upon the attention of their members of Parliament, so that it may be examined and a remedy applied without delay. If trade were free, co-operative production could rise and stand firm. If it were fair, it could swim with the stream and live. It is because it is neither free nor fair that the difficulties in the way are great and cannot be overcome."

The Education of the Artisan.

Professor Huxley says:—"For myself, I look upon simple knowledge by itself as of far less importance to the artisan in his career in life than a number of other qualities. I do not say that knowledge is not an extremely good thing; but if a man is to make a good workman, or to do anything in practical life, you must give him an education that fits him for the conditions of life with which he has to deal, and you will not give him that education by filling his head with a number of intellectual abstractions, or even by giving him the largest acquaintance with scientific principles. And I think it is a profound mistake, considering the career to which the majority of artisans, or persons in that class of life, are necessarily bound, ever to take them out of the wholesome discipline of practical contact with the realities of life, for the mere sake of giving them a greater or less amount of knowledge. A man who is inclined to do so may always pick up knowledge, and he may do so at the same time that he is getting his education, in the highest sense of the word, out of his contact with the realities of his daily life; but if you make a bookworm of him, if you take him away from all that contact with reality, and turn him back afterward into it, he has lost touch of life. I speak with the greatest hesitation, because I have nothing to do with industrial pursuits; but I have had to do with mankind in many stations in life, and it seems to me that what is wanted in a foreman is a man of energy, punctuality, business habits, and power of dealing with men, all of which things are not to be got out of books of laboratory work. These qualifications are the most essential qualifications in a foreman, and what you want besides in such a man is not book learning, but an intelligence sufficiently trained to be able to deal with new conditions, and an amount of knowledge sufficient to enable him to know where to go to find more if he wants it."



Ornamentation of Textiles.

(Continued from Page 53.)

(To be continued.)



ERRY, in his voyage to the East Indies, 1655, says:—"The natives of this monarchy are the best apes for imitation in the world, so full of ingenuity that they make any new thing to pattern, how hard soever it seems to be; it, therefore, is no marvel if the natives there make shoes, boots, cloths, and linen of our English fashion, which are all of them very much different from their fashion and habit." Terry also tells us "that they," likewise, "make excellent carpets of cotton wool in fine mingled colours, so artificially mixed that they represent those flowers and figures made in them." Nearchus producing proofs of their skill in works of art and imitation, says:—"That when they saw sponges in use among the Macedonians, they imitated them by sewing hairs, thin threads and strings, inextricably through flocks of wool, and after the wool was well felted together, drew out the hair, thread and strings, when a perfect sponge remained, which was dyed to imitate the original." Dr. Rock, in his "Textile Fabrics," has much to say on Indian cotton and linen. He tells us:—"When Alexander wished to give some ambassadors a splendid reception, he had a grand display of golden couches upon which to lie to eat their meat, they were screened with cloths of gold and purple, and the Indian guests themselves were not less gorgeously clothed in their national costume, for they came wearing linen garments equally resplendent." The passion for finery, the love for brilliant and extravagant dress, which distinguished the inhabitants of the Maritime cities of Venice, Calabria, and Campania, arose out of the fall of the Western empire, but the Romans, when withdrawing from these countries, did not carry with them that love for rich fabrics which characterized the people they were leaving—and we know that the Iberians wore coarse and dark coloured woollen garments, whilst, on the other hand, the Gauls were at the same time remarkable for their brilliant costumes, which were at times ornamented and enriched with precious stones, embroidered in gold and silver, and of many bright colours; this display of finery required to be constantly ministered to, so the native looms were set up in rivalry to those of Greece and Rome, and they resisted, for some time, the rude shocks of successive inroads which were made upon them, but were at last driven to take shelter in the cloisters of the religious monasteries. Hence it was in these hallowed places, that were mainly fostered the practice and art of ornamenting textile fabrics, which ornamentation was carried to a very high degree of perfection: from this time these retreats gradually became centres of active industrial life. Trades, businesses and handicrafts of all descriptions were now clerical pursuits, and were practised under the shadow of the church by wealthy and powerful associations. There was a feeling alive in the middle ages, that the best of all things should be devoted and given to the church. Knowing these facts, we do not wonder that ecclesiastical buildings possess so very many valuable relics of artistic textiles, nor yet are we surprised at the Holy Pontiffs, Bishops, Priests and Abbots, encouraging the manufacture of ornamental fabrics, especially those materials which were to enhance the pomp of religious worship. Hence we have those marvellous copes, still so jealously preserved in our churches and cathedrals, which astonish us even now, in our advanced age, by the finished workmanship which almost defies imitation. We read of the reliquaries adorned with gold and jewels, made by Saint Eloi, to be placed on the shrines of the saints, which shrines were usually covered with a silk veil, mostly woven in the precincts of the cloisters. At that time these veils were always embellished with costly embroidery, and were much used in sacred edifices. Gregory of Tours often mentions these wonderful fabrics, while other writers give long descriptions of the tapestries of diverse sorts which were hung on the walls of churches, some entirely of silk, others ornamented with pictorial representations. Costly raiment, handsomely decorated with the most skilful and ingenious designs, has been in use in the church from the very earliest times. From the document published by the order of the Master of the Rolls, we learn that the vestments of Evesham Abbey were of silk, and that silk has played a most conspicuous part in the vestments of all pious and fervent worshippers from time immemorial. The best copes, chasubles and vestments in St. Paul's, London, were made of silk, so were the gorgeous chasubles bequeathed to Durham Cathedral, the chief of which was of red samit (silk) superbly embroidered. The genuine monuments of Christian art which we read of being placed in the Catacombs of Rome (subterraneous excavations which were used for the burial of the dead, and as places of Christian worship), include many precious relics of antiquity—paintings, works of art, and frescoes, illustrating scenes from holy writ; these sacred monuments have been seen, admired and glorified by the frequent pilgrims to that eternal city, who, on their return to their native homes, applied and followed

the arts and examples of their predecessors, in adorning the sacred vestments and fabrics of their churches. Still this extravagant and sumptuous display of richly ornamented fabrics, for the use of holy worship, did not meet with the approval of all the holy Pontiffs, in fact, it was deplored by some of the most austere servants of the church. We read that saint Cæsarius, also Bishop of Arles, in the sixth century, forbade, especially in the nunneries, the use of fancy ornaments embroidered in silk or in bombycine, and he hurls fearful anathemas against such stray sheep as would not yield to his orders. In the Council of Cloveshoo, in the seventh century, the nuns were advised "to spend more of their time in the reading and singing of the Psalms rather than in knitting and weaving of vainglorious garments of many colours." Notwithstanding the zeal of some of the fathers and priests to try and bring the limit of ornamentation within the boundary of economical and virtuous display, some of the most gorgeous fabrics and the richest tapestries continued to be sold, and even manufactured, under the very shadow of the churches they were intended to decorate. With all these ecclesiastical ornaments, the brilliance of which was heightened by gold and silver, at times by sparkling gems and precious stones, we cannot wonder at the taste for magnificent costumes, fabrics and tapestries, being fostered and spread abroad; but the very churches and cloisters that had nursed the art of manufacturing, and the sacred retreats that had thus fostered the gorgeous display, soon became unsuitable places for further patronage in proportion as the great and noble of the land began to have recourse to rich apparel. Gorgeous materials were in demand for every kind of enjoyment, at home and abroad; they were not only used for decorations on the walls of sacred edifices and apartments, but also for the tents of kings, feudatory lords, for war, for chase, and for the tournament. The Very Rev. Daniel Rock, D.D., tells us of many worldly displays in which rich garments had a foremost part. We read of the streets of London (in the time of Elizabeth), "being cleanly dressed and besene with clothes of tappestrey, and some streets, as Cheepeside, hangged with rich clothes of gold, velvetts, and silks." Extravagant and costly fabrics have been used in England, and in all foreign countries alike, in providing richly ornamented palls with which to cover the biers of the dead, more especially for those of the members of the various guilds, and Dr. Rock gives us an account of the obsequies of Henry the Seventh in Westminster Abbey—a copy of which I give. "Twoe herands came to the Duke of Buck, and to the Earles, and conveyed them into revestre, where they did receive certen palles, which everie one of them did bringe solemnly betwene theire hands, and cominge in order one before another as they were in degree unto the said herse, they kissed theire said palles and delivered them unto their said herandes which laide them uppon the kyng's corps, in this manner: the palle which was first offered by the Duke of Buck, was laide on lengthe on the said corps, and the residewe were laide acrossse, as thick as they might lie." The noble dames of old did not long remain satisfied with subjects drawn from the Old Testament, for the ornamentation of their work, but required other subjects drawn from the great epic poems of mediæval chivalry, and the pleasant legends of classic times; all monastic ateliers and workshops, therefore, fell into disfavour as the people desired to have their costumes decorated with designs from subjects other than those which belonged to the church, accordingly, secular workshops became of more importance, and from this time they began to arise in all parts of the polite world.

(To be continued.)

A Water-Proof Soap.

A Leipsic chemist renders cloth impermeable to water by means of an aluminous soap. For cotton he dissolves a half kilo. (a kilo is 2.2 lbs. Av.) of Castile soap in 145 litres (a litre is 0.22 gals.) water—hot, but not boiling. In an equal quantity of water, in another vessel, he dissolves one kilo. of alum and adds to the solution 90 grams (a gram is 16.9 grains Av.) glue. He then mixes the two solutions while hot, soaks the cloth in the mixture, and then dries. For linen cloth a solution of 165 grams of the soap in 8 litres rain-water is made, and one of 320 grams alum in 8 litres water. These solutions are not mixed, but both are brought separately to 100° C. The cloth is first soaked in the suds, and then in the alum. For wool, 112 grams of white soap are dissolved in 8 litres boiling-water, and 165 grams alum in the same quantity of water. Both solutions are brought to 60° C. The cloth is soaked, first in the solution of soap, then in the solution of alum, and dried in the air. For silk, 500 grams soap and 180 grams alum are employed. Tissues thoroughly impregnated with this aluminous soap remain flexible. The application of the method to the rendering of collars and cuffs water-proof readily suggests itself. When soiled they should be thrown into slightly acidulated water, which decomposes the soap, sets the alumina free, combines with it and dissolves it. The remaining fat is readily removed by rinsing in water, washing in a weak solution of caustic soda, and drying. The material is then in a condition to be again rendered water-proof by the process described.



International Inventions' Exhibition.



THE International Inventions' Exhibition, which was opened early in May, on a most extensive scale, cannot be considered to derive the success it may achieve from its textile department. The opportunity offered to manufacturers, machinists, and others; connected with the textile industries, of bringing their inventions prominently before the public, might certainly have been more fully embraced than has been the case. Probably the restriction placed upon those eligible to send exhibits may account for this result, or another cause may be found in the numerous exhibitions which have been held during the last year or two, such as the Woollen Exhibition at the Crystal Palace, the Textile Exhibition at the Agricultural Hall, and those held in the provinces; another cause may be the depression of trade. But whatever the reason, the show of textile machinery and fabrics is not nearly so large as might have been wished. However, there is much in this department of interest, and taking the exhibition as a whole, it is worthy of a visit. It is not our intention, in this article, to enter fully into the merits of any of the exhibits, but we will content ourselves with a brief notice of those most worthy of the attention of our readers.

Messrs. Butterworth and Dickinson, Burnley, show improvements in looms for weaving, and a patent Dobby. Messrs. Henry Livesey, Limited, Blackburn, a loom with a loose reed for weaving shirtings, with a number of improvements, and a patent taking up roller. An old loom, made half a century ago, is placed by the side of the above, and shows the improvements made in this class of machinery during the period named. Mr. George Hodgson, Bradford, makes a good display of improved looms. Messrs. Hacking & Co., Bury, show looms for weaving checks, with patent 4-shuttle motion, and also an improved loom for weaving trouserings; a patent machine for folding and measuring finished woven fabrics, and a machine for winding coloured yarn on weaver's pirns, or paper tubes. Messrs. W. Dickinson and Sons, Blackburn, exhibit a motion for weaving handkerchiefs; a tension motion for the winding of yarn, and a beam presser. Messrs. Taylor and Sons, Marsden, Yorkshire, have an exhibit of improvements in mechanism for actuating the healds of looms; an improved joint for heald levers, and also mechanism for actuating the rising and falling of loom boxes.

Mr. Samuel Brooks, Union Iron Works, West Gorton, Manchester, shows a collection of spinning, doubling, and winding machinery, which embraces the following:—A drawing frame, a twist ring spinning frame, a weft ring spinning frame, a ring doubling frame, a winding frame, and a "Ferguslie" balling machine, all of which contain patented improvements. He has also on view a case containing samples of bobbins of doubled yarn, single yarn, weft pirns, rings and spindles, the latter perhaps the most varied and complete collection of modern rings and spindles; loom temples, wrap block, wrap reel double traverse, yarn quadrant, improved hygrometer, hank indicators, patent fire syringes, oil measures and pumps, spindle speed indicators, samples of round top clearers and "Walker's" patent fixings, fluted rollers for drawing and spinning frames, brass covered rollers for doubling frames, Bourcart, Young, and Furniss's patent anti-balloon rings, model of Brooks' patented finger bar motion, and other accessories, including samples of "American standard" ring travellers for spinning and doubling in steel and brass wire, made by the latest and most improved machinery. The McNary Machine Co., Lombard Street, London, show machinery for the manufacture of fabrics of wool, cotton, hemp, jute, etc. Messrs. Robert Broadbent and Son, Stalybridge, have on view a patent conical drum winding machine for winding yarn on paper tubes, patent loose brass top rollers for cotton machinery, and the instantaneous grip belt fasteners. Messrs. Walter T. Glover and Co., Salford, exhibit a patent doubling and laying machine, a rope making machine, a rope pulley friction brake, a piston ring, and a new standard wire gauge. Messrs. James Farmer and Sons, Salford, show a creasing and measuring machine, a universal calendar, and an apparatus for bleaching, washing, scouring, etc. of fabrics. Messrs. Matthew and Platt, Salford Iron Works, Manchester, exhibit a patent sampling machine for calico printers to make combinations of designs and colours on short lengths of cloth to show effects, a patent continuous bleaching machine, and a patent open soaping and washing machine. Mr. Thomas Thorpe, Beach Avenue, New Basford, Nottingham, has a doubling machine with upright spindles and stop motion, for running two or more threads together, without twisting on spools or bobbins, and a winding machine. These machines are specially designed for hosiery yarns. Sachs Engraving Co., 8, Union Court, Old Broad Street, London, have a new process for engraving, printing and embossing, suitable for calico and other textile fabrics. Mr. Alexander Youngson, 3, Chestnut Row, Belmont, Aberdeen, shows a patent

drag arrangement for spinning machines. Messrs. Wilson Brothers, Cornholme Mills, Todmorden, show improvements in wood bobbins, tubes, spools, etc., and Thomas Tweedale, Sunnyside, Rawtenstall, Lancashire, improvements in shuttles. Messrs. Gauntlett and Co., Union Factory, Trowbridge, Wiltshire, show patent carding engines, as does also Mr. J. R. Kaye, Arcade Chambers, St. Mary's Gate, Manchester. Messrs. T. R. Harding and Sons, Town Works, Leeds, exhibit cast steel gill combs and card pins, and machine drilled circle combs, porcupines and gills. Mr. John Bell and Sons, 118, Southwark Street, London, show the art of spinning Asbestos fibre without the admixture of other fibres. Under the head of prime movers there are many exhibits of interest to textile manufacturers, such as Clerk's patent gas engine, made by Messrs. L. Sterne and Co., Crown Iron Works, Glasgow; the Otto gas engine, made by Messrs. Crossley Brothers, Limited, Manchester. There will also be found the patent pulley with perforated rim, made by the Patent Power Pulley Company, 21, Arcade Chambers, St. Mary's Gate, Manchester. Steam boilers and engines are here exhibited by some of the best makers, including the well known firm of W. and J. Galloway and Sons, Knott Mill Iron Works, Manchester.

It may be interesting to our readers to mention that Rodgers' patent pulleys with wrought iron rim, arms and boss, are used exclusively for driving the electric light in the Exhibition, as they were for the recent Fisheries and Health Exhibitions. They may also be seen working at the stand of the Kirkstall Forge Company. The makers of these pulleys are Messrs. Hudswell, Clarke and Co., Railway Foundry, Leeds.

Mr. W. L. Fawcett, 11, Church Street, Kidderminster, exhibits improvements in drawing designs for, and in the manufacture of carpets, and such fabrics. Mr. Henry Fawcett, Kidderminster, shows Chlidema carpets, which can be made to any required size without mitre, cross join or false shading, and also worsted combined in manufacture to produce new effects. Mr. F. B. Fawcett, Kidderminster, has a display of Brussels velvet carpets and rugs, with pleasing combinations of new tints. Messrs. M. Whittall and Co., Kidderminster, show improved embossed or raised fabrics. Messrs. Howell and James, Limited, London, exhibit samples of damask table linen in various stages of manufacture, as well as samples of Irish and Courtrai flax, &c. Here also may be seen an Irish hand-loom with weaver at work. Messrs. H. A. Midwood and Co., 81, Fountain Street, Manchester, have on view the Lyceum satin cloth, novelties for dress linings, and specimens of portrait painting on calicoes for costumes, aprons, and a variety of other uses. Mr. Albert Fleming, Neaum Crag, Langdale, Ambleside, Westmoreland, exhibits specimens of Langdale linen, showing the revival of hand spinning and weaving linen in Westmoreland. Messrs. M. A. Turner and Co., show the Connaught fingering wools, with knitted specimens, and Messrs. Parry and Rocke, Swansea, show Welsh knitting yarns and hand knitted hosiery.

Alteration from Twist to Weft.

It often happens, when altering from twist cops to weft cops, that the builder, or shaper wheel, is often changed by guessing work, which sometimes results in the cops being too thin, and sometimes too thick. This foolish and unsystematic way of working has destroyed hundreds of weight of yarn in the past, and entailed considerable loss upon manufacturers. When the cops are too thick, and are noticed before they commence rubbing, the practice is to put more weight upon the fallers; this causes the yarn to break down while winding on the spindle, thus so much yarn is lost unnecessarily, and so much loss sustained both by the spinner and the employer, which could be averted by a little time, patience, and the adoption of practical methods, by second hands and overseers. If it should happen that the cops begin to rub together by being too thick, then a greater loss will be sustained: for, in many instances, they have to be doffed off, owing to their unfitness to spool or weave, and sold for banding. The following is the best example to find the builder wheel in changing from twist cops to weft cops.

Rule.—Square the diameters. For a divisor take the square of the cop you are making, and for a dividend multiply the shaper wheel, you have on, by the square, of the diameter of the cop required.

Example.—If a mule was spinning 32s. diameter of cop $1\frac{1}{4}$ inch or $\frac{19}{8}$ ths, and a 38 builder wheel, what will be required for a cop of $\frac{7}{8}$ ths diameter?

The square of $10=100$. The square of $7=49$. Then $38 \times 49 \div 100=18$ builder wheel required. This is a simple and easy rule, when once mastered, and one which will be found to be of great service to overseers, and of great benefit to manufacturers, by giving more yarn and less waste, and to the spinner by averting breakage of yarn through being over-weighted on the fallers, and making labour less exhaustive. Little things like these, by being attended to, and worked practically, have laid the corner stone of many fortunes in the world's past history.—*Wade's Fibre and Fabric.*

Silk.—Combing and Spinning.

(Continued from Page 52.)



VARIOUS fumigations and washes have been tried in order to purify infected nurseries, and to secure others from infection. A solution of blue vitriol (sulphate of copper), applied to the woodwork, frames, &c., of the nursery may be of use in destroying the seeds of the fungus, but a rigid attention to cleanliness and ventilation is the best preservative. Count Dandolo, an Italian, has written a volume on the treatment of the silk-worm, which has been translated into English, and published by a society called the British, Irish and Colonial Silk Company. He was the first who gave particular and scientific attention to an improvement in the means for preserving the health of these insects, and, according to his plans, wicker shelves are arranged in a room at convenient distances from each other, and lined with paper, on which the worms are placed. The worms hatched at the same time are placed on the same shelf, the space allowed them being for each ounce of eggs 8 square feet during the first age, 15 feet for the second, 35 feet for the third, 82½ feet for the fourth, and about 200 feet for the fifth. The mulberry leaves are chopped in order to present a large number of fresh cut edges to the young insect. The allowance for the subsistence of the worms is four meals a day, but, if they are particularly voracious, then they have meals oftener. The worms appear to be the healthiest when kept at a temperature of from 68° to 75°, but they are able to bear a much greater degree of heat than that; alternation from heat to cold are not conducive to their welfare. When the worms are about to spin, they are furnished with little bushes of broom or heath, or any other flexible substance, arranged in a vertical position between the shelves, their tops being curved by the shelf above. These little bushes are spread out like fans to allow plenty of room for the cocoons, for if they are crowded, the worms are apt to form double cocoons, two working together, which are worth the price of single cocoons. In the department of the Drôme in France, where the culture of the worm is carried on to so great an extent that 3,000,000 mulberry trees are required to supply them with food, the mode of managing the insects differs slightly from the one above described. Instead of using wicker shelves, lined with paper, the bamboo-like rushes, which abound on the banks of the Rhone, are cut down, split open, and secured together so as to form long cane beds, about 2½ feet broad. A rough frame work is erected throughout the rooms, leaving space for the attendants to move about, and on this frame work are arranged, one above another, the cane beds, or "claires" (as the French call them). As soon as the worms are hatched, they are strewed among the claires, and the mulberry leaves are scattered over and amongst them at the proper moment. The attendants use short ladders in order to reach the upper beds. In some establishments these claires are so arranged that they hang from the circumference of large wheels placed at each end of the room, and by turning these wheels the attendants are able to fulfil their duty to the worms. From time to time many attempts have been made in this country to rear the silk-worm. The last, on an extensive scale, was made in Ireland by the company before mentioned. It was thought that, could the worm be introduced into the sister kingdom, it would be an easy and profitable employment for the natives. A large piece of land was purchased near Cork, and planted with 400,000 white mulberry trees, which grew well. A building was erected for rearing purposes, and, in spite of the moist and variable climate, there would have been every chance of success, but through the ignorance and awkwardness of the peasantry, who had never been employed on anything requiring so much care and attention, the scheme failed. The same company tried to rear the insect in England, and planted 70,000 mulberry trees at Slough, which prospered well, but after some time the experiment was given up, and the company was transferred to Malta. Similar attempts were made in America, and with like results, the unskilfulness of the labourer preventing the means adopted securing success. That it is not impossible to cultivate the insect in colder climates is proved by the fact that both in Russia and in Sweden the mulberry is grown and silk produced to some extent. The new variety of worm, *Bombyx cynthia*, is being cultivated in some of the colder countries of Europe—in Germany, Russia and Sweden, and that the cultivation has attained some success, was proved by the cocoons shown in the exhibition of 1862, in the Swedish Court, by the Silk Society of Stockholm. About 25 years ago, a Mrs. Whitby succeeded, by her energy and skill, in obtaining excellent silk from Italian worms hatched and reared in Hampshire. British India possesses a climate and an abundance of labour favourable to this undertaking, therefore we find the culture and the rearing of the silk worm increasing and improving in that part of the world. In Bengal there are eight or ten factories, each employing from 3,000 to 10,000 persons, and the results of the exhibition of 1851, proved the superior quality of the silk obtained.

(To be continued.)

Trade in South West China.

PROPOSED RAILWAY.

A subject of great interest to textile manufacturers generally, was dealt with a few days ago at Glasgow, by Mr. H. S. Hallett, whose exploration of the country lying between the Gulf of Siam and South Western China has enabled him to speak with the weight of authority on the trading probabilities of the district. The subject of his address was the importance of railway enterprise to South Western China. After careful personal inspection of the entire neighbourhood through which the lines would pass, Mr. Hallett has no hesitation in saying that the construction of a system of railways would be handsomely remunerative as an undertaking, and would tend greatly to increase our trade in a vast region inhabited by a people with a strong instinctive desire to improve their condition by trade. At the present time, the States are traversed in every direction by caravans carrying the produce of China, Burmah, the Shan States, Siam, and Europe, and distributing it throughout the country. It is Mr. Hallett's opinion that if certain proposed railways were constructed, goods could be delivered at Kiang-Hsen, on the Meh-Kong River, at from one-fiftieth to one-hundredth of the rates now charged. Trade is, of course, seriously restricted by the heavy charges of transport, and in addition to the charges there is the enormous waste of time in the carrying and distribution of manufactures, and other goods. Raw cotton purchased in the Shan States sells at Yunnan for four times its original cost, the journey to and from occupying four months. At the time of Mr. Hallett's visit, English goods purchased at Bangkok were selling at Zimmé at the following enhanced prices: green and black flannel, 50 per cent; red cotton yarn, 34½ per cent; matches, 67½ per cent; zinc pails, 260 per cent; candles, 40 per cent; kerosine oil, 55 per cent; sulphur, 57 per cent; iron bar, 38½ per cent; iron nails 55½ per cent; muslins of various qualities, from 12½ to 35 per cent; and twist cloth, from 19½ to 23½ per cent. The number of trading caravans which pass through the Shan States is very large, and the means of communication are described, generally, as being very much like what they were in this country before the commencement of the Bridgewater Canal in 1758. In considering the advantages which would be derived from the construction of railways, Mr. Hallett pointed out that British Burmah has one-tenth of the whole trade of India, that Upper Burmah carries on a trade with us of about £3,000,000 sterling; that a million sterling of treasure is imported into Burmah each year more than is exported; that Chinese emigration would set in rapidly into the fertile plains of Indo-China; and that at present only one-fiftieth part of British Burmah is under cultivation. The main line proposed to be constructed would run from Bangkok, the capital and chief seaport of Siam, up the valley of the Meh-Nam River, through the magnificent delta which commencing at Ta-poo-ey, is about 300 miles in length, and contains an area of about 20,000 square miles, past Raheng, where it would be connected with the branch line to the British Burmah seaport of Maulmain, thence up the Valley of the Meh-wung, past Lakhon, the capital of one of the largest of the Siamese Shan States, and across easy passes into the Valleys of the Meh-Ngow, Meh-Ing, and Meh-Low to Kiang-Hai, and thence up the magnificent plain of Kiang-Hsen to that ancient city, which is situated on the Meh-Kong river, a few miles south of the frontier of the Burmese Shan States, and about 190 miles from the south-west frontier of China. In time, it is hoped to extend the line through Upper Burmah to the border of China, there to be joined on to a system of railways which, it is expected, will be constructed in Yunnan, renowned as the chief source of the metallic wealth of the Celestial Empire. Mr. Hallett is going the right way to work in spreading information as to the interesting country he has been engaged in exploring. When once he has succeeded in making it clear that the proposed railway is the one thing needed to give a fillip to our trading and commercial relationship, there will not long be any difficulty in raising the means for the enterprise.

The Italian silkworm breeders have held a meeting at Conegliano, and have resolved to found a union of cocoon producers, whose object it will be to watch the silk culture, to collect cocoons, and to arrange a common remunerative tariff of prices.



ORIGINAL DESIGNS.

On our first plate we give a design for a Tapestry Fabric, which is intended as the body pattern for a curtain. If woven in four colours, it would make an effective fabric. This has been designed by Mr. R. T. Lord, 97, Park Road, Bradford.

On our second plate we give a design which is intended by the designer, (Mr. R. T. Lord), as a Border for the Curtain Design given on our first plate. We may say that Mr. Lord will be pleased to forward at a reasonable price, a Dado to correspond with these designs.

A design for a Mantle Cloth forms the subject of our third plate, and is intended for a Matelasse, but it is quite as suitable for a Broché Satin or Velvet. Mr. R. T. Lord is also the designer of this pattern.

TO MANUFACTURERS AND DESIGNERS OF CLOTH.

The latest patterns of French and English Coatings, Vestings, Suitings, Fancy Cloths, Cassimeres, Tweeds, Mantle Cloths, &c. These Patterns give the latest Designs and Colourings for Cloths for the Spring and Summer Seasons in 1886.

100 SAMPLES FOR £2. CARRIAGE PAID.

A remittance must accompany order, made payable to H. and R. T. Lord, the "Journal of Fabrics and Textile Industries." Office, 10, Ann Place, Bradford, England.

MONTHLY TRADE REPORTS.

Wool.—In nearly all the districts a better feeling has characterised the markets during the past month, and a gradually increasing confidence in an improved trade has been felt. Stocks on hand have not, as a rule, been large, and this has had a tendency to make holders ask advanced rates. Prices generally have been a shade higher, and on the whole, have shown much firmness. Short wools have improved in demand, and prices of most descriptions have been firmer. The tone of the yarn branch has been good, although orders have not come as freely to hand as could have been wished, still, numerous inquiries have been made, and this fact has caused the markets to show a firm tone. In most descriptions of fancy yarns—as looped, knotted, &c.—a good business has passed and there is no appearance of abatement. Soft yarns have been rather neglected. The piece trade has shown no signs of a permanent improvement, and prices have in consequence suffered somewhat, few inquiries have been made that have resulted in business. The orders manufacturers have secured have been small and low in price. Much short time is being run in the Bradford district.

Cotton.—The cotton trade has shown no new features, very unsatisfactory markets being the rule. Manufacturers still complain of the very unremunerative state of business in nearly all departments. Yarns have been put upon the market in great abundance, and have more than met requirements. The Whitsuntide holidays have, of course, curtailed production, but

stocks being heavy, they had little effect on the market. The talk of short time in the spinning mills has been in the mouths of all concerned, but whether this will improve trade is to be seen. The manufactured articles, it is true, have not suffered much in price during the month, but still they have been generally sold under the cost of production.

Woollen.—In this branch of the textile industry, some departments have been in a fairly busy condition, whilst others have been unsatisfactory. In the Leeds and Huddersfield districts, the better classes of worsted coatings and trouserings still meet with a fair demand, twills and corkscrews being the most in favour, but this branch is not in as good a condition as it has been for some time past. Fancy worsteds have also been in moderate demand, whilst the manufacture and sale of medium and low qualities have been rather unsatisfactory. Tweeds for the clothing trade have sold moderately well, and manufacturers of them keep employed, although the prices are generally cut very fine. In the Scotch districts, there has been an improvement in trade, and for the better classes of fabrics there has been a better demand, and prices have hardened. Manufacturers are sanguine that this improvement will continue at least for a time.

Linen.—This branch has not been quite so good during the month as it was in April, although prices have not shown any tendency to decline. Manufacturers keep fairly employed, and, on the whole, are doing a satisfactory business. In the jute branch, a falling off in the demand has been experienced, both in the raw material and in the manufactured article, although not sufficient to show an actual alteration in prices.

Lace.—On the whole, the trade has been quiet, and manufacturers of most kinds of lace are not sanguine of any revival within a short time. The demand for curtains, antimacassars, &c., has been moderate, but prices remain unsatisfactory, the competition in this branch being unusually keen. In coloured and harlequin laces the inquiry has been fair, and makers have been kept fully employed. For other descriptions, orders have come to hand sparingly, and the supply generally is in excess of the demand.

Carpets.—There is no new feature to report in the carpet trade. In the tapestry branch, the quietness chronicled for the past few months has continued, and looms, as a rule, are not fully employed. The competition is so very close that it seems almost out of the question for a manufacturer to make any satisfactory remuneration for the capital employed. Brussels of a cheap kind have been in fair demand, and there are good orders on hand. The rug trade has shown no new features during the month. Prices have had a rather weakening tendency.

Commercial Failures.

According to *Kemp's Mercantile Gazette*, the number of Failures in England and Wales gazetted during the five weeks ending Saturday, May 30th, was 426. The number in the corresponding five weeks of last year was 298, showing an increase of 128, being a net increase, in 1885, to date, of 151. The number of Bills of Sale published in England and Wales for the five weeks ending Saturday, May 30th, was 1,295. The number in the corresponding five weeks of last year was 1,208, showing an increase of 87, being a net increase, in 1885, to date, of 124. The number published in Ireland for the same five weeks was 72. The number in the corresponding five weeks of last year was 73, showing a decrease of 1, being a net decrease, in 1885, to date, of 6.

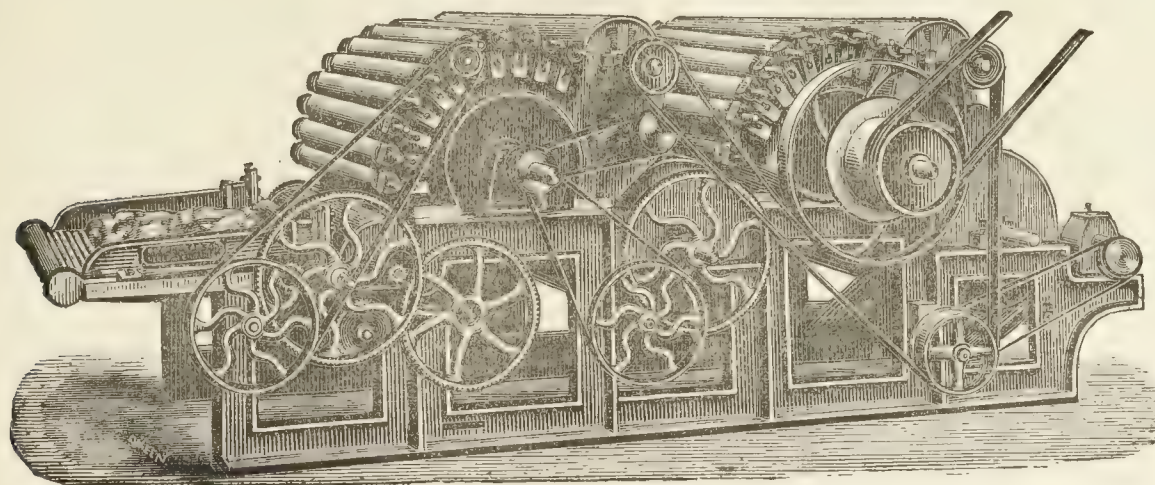
M. Eitner proposes the following simple method of determining the value of leather employed on belting: a cutting of the material about .03 of an inch in thickness is placed in strong vinegar. If the leather has been thoroughly acted upon by the tannin, and is hence of good quality, it will remain, for months even, immersed without alteration, simply becoming a little darker in colour. But, on the contrary, if not well impregnated by the tannin, the fibres will quickly swell, and, after a short period, become transformed into a gelatinous mass.

MACHINE "GARNETT"

*For Opening Hard Twisted
Woollen and Worsted
Waste.*



*À ouvrir les laines fortement
frisees et les dechets
de laine.*



These Machines are guaranteed to be of the very best quality, both as regards material and workmanship, and possess many recent improvements.

We beg to announce that we have just obtained
ROYAL LETTERS PATENT

For improvements in these Machines, whereby we are now able to put 14, 16, and even 24 rows of teeth per inch on to the cylinders, whereas formerly we could not exceed 12 rows per inch.

Ces machines sont garanties de première qualité, sous le rapport du choix des matériaux et de la construction. Elles renferment plusieurs perfectionnements tout nouveaux,

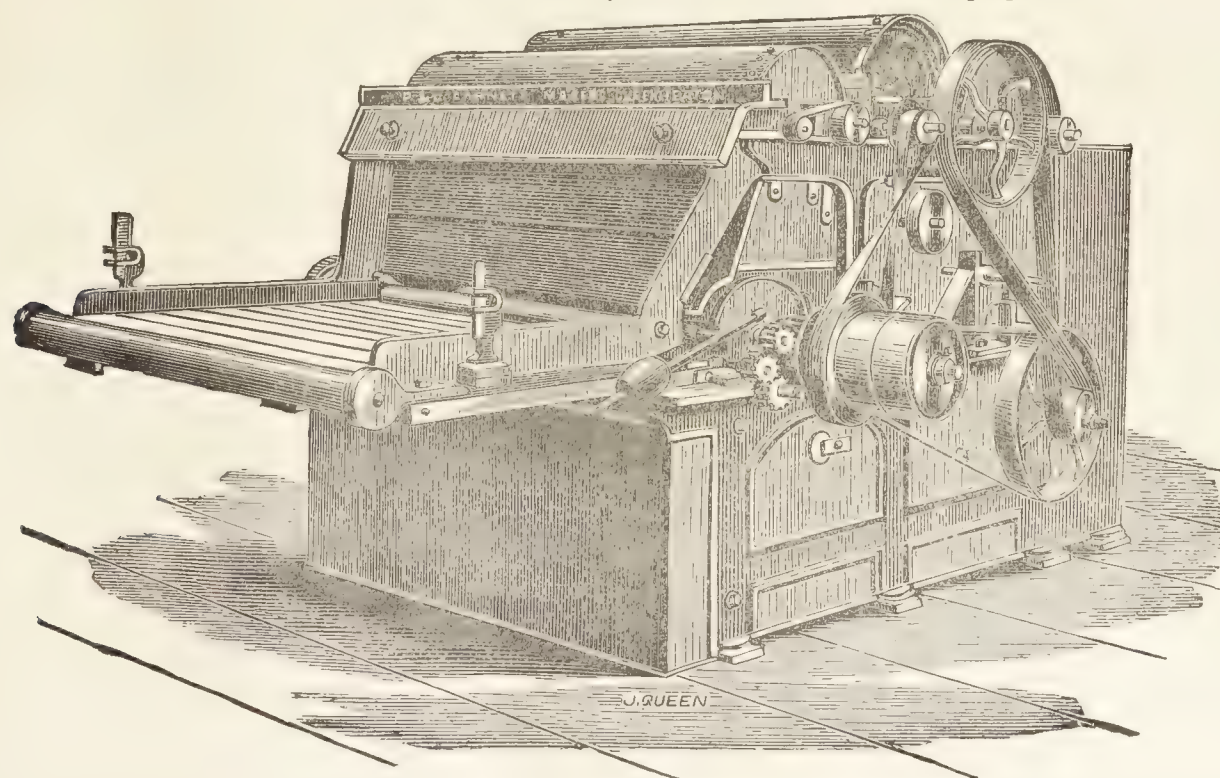
Nous venons d'obtenir
UN BREVET ANGLAIS

Pour un perfectionnement au moyen duquel nous pouvons placer 14, 16 et jusqu'à 24 rangs de dents au pouce sur les cylindres, tandis que jusqu'alors nous ne pouvions dépasser 12 rangs au pouce.

P. & C. GARNETT, SOLE PATENTEES,
CLECKHEATON, YORKSHIRE.

WHO ARE ALSO MAKERS OF
GARNETT'S PATENT COTTON GIN,
Unequalled for fast Seed Cotton.

NOUS CONSTRUISONS AUSSI
L'EGRENOIR BREVETÉ DE GARNETT
Sans rival pour la préparation des cotons à graine dure.



**IMPROVED WOOL CLEANING AND BURRING
MACHINE,**

Capable of cleaning 1,500 lbs. to 1,600 lbs. of Wool per day. The very best and most economical machine for this purpose which has yet been introduced to the public. Also

GARNETT'S PATENT METALLIC CARD,

For covering burr rollers and breasts of carding engines for woollen and worsted, and
TAKERS-IN OF COTTON CARDING ENGINES.

From Mr. ROBERT PLATT.

Stalybridge, May 9th, 1877.

In answer to your inquiry of the 7th, I have had your patent Metallic Cord in use more than twenty years, and am very much pleased with the working of it. Its advantages are that it is much cleaner and less costly than leather or any other covering.

**LA MACHINE PERFECTIONNÉE À NETTOYER
ET ÉCHARDONNER LES LAINES,**

Pouvant nettoyer 1,500 à 1,600 livres de laine par jour. C'est la meilleure machine et la plus économique qui ait jamais été offerte pour cet emploi à l'industrie. Nous construisons aussi

**LES CARDES MÉTALLIQUES BREVETÉES
DE GARNETT,**

Pour garnir les alimenteurs, et poitrinières des cardes à laine et à laine peignée

LES BRISEURS DES CARDES À COTON.

Attestation de M. ROBERT PLATT.

Stalybridge, 9 Mai, 1877.

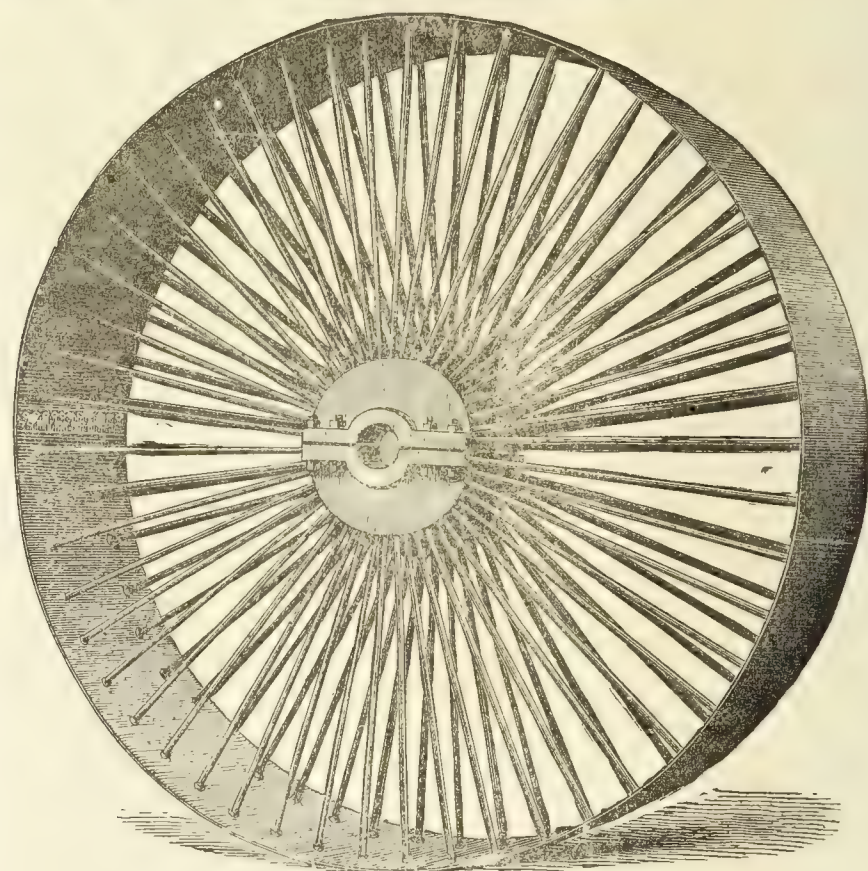
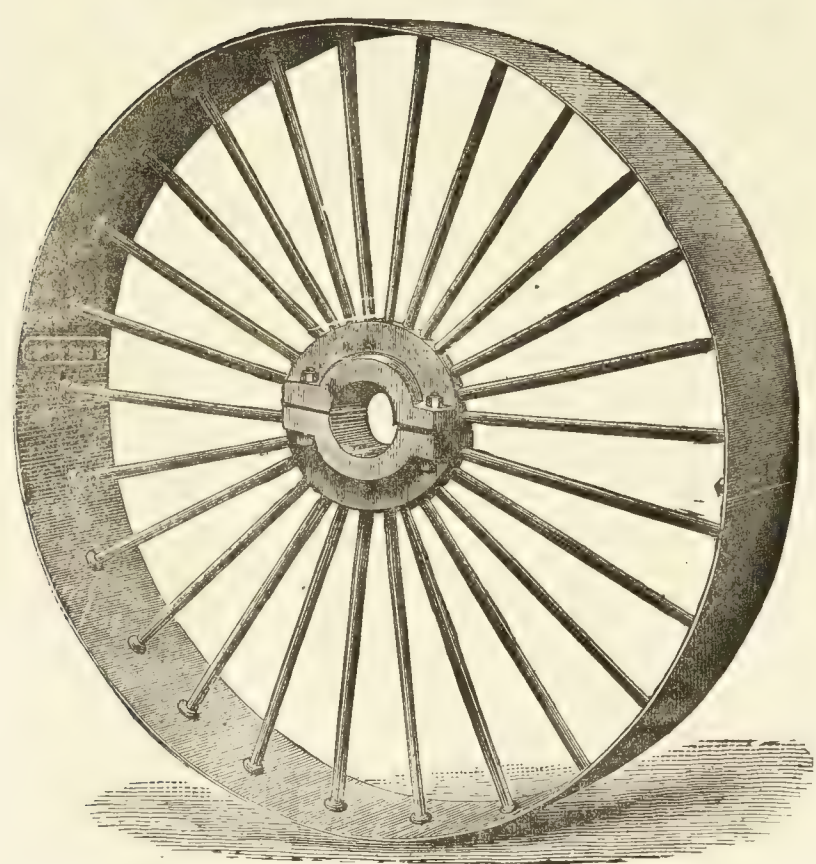
En réponse à votre lettre du 7 ct. j'emploie depuis plus de vingt ans votre système breveté de cardes métalliques et j'en suis très satisfait. Il possède l'avantage d'être beaucoup plus propre et moins cher que le cuir ou tout autre genre de garniture.

Agent—Mr. C. BORISSOW, Rue a Fiens, 3 ter. Lille, FRANCE.

RODGERS' PATENT WROUGHT IRON PULLEYS, SPLIT OR SOLID.

ALL SIZES FROM 6 INCHES UP TO 24 FEET DIAMETER.

Over 45,000 in use.



THE BEST PULLEY IN THE WORLD.
Wrought Iron THROUGHOUT, RIM, ARMS and BOSS.
THE ONLY WROUGHT IRON PULLEY MADE.

SOLE MAKERS—

HUDSWELL, CLARKE & Co.
RAILWAY FOUNDRY,
LEEDS, ENGLAND.

Used exclusively for DRIVING the ELECTRIC LIGHT at the Great
International Inventions' Exhibition.



TAPESTRY FABRIC.



BORDER.

THE JOURNAL OF FABRICS AND TEXTILE INDUSTRIES

12TH JUNE, 1885.

DESIGNED BY R. T. LORD

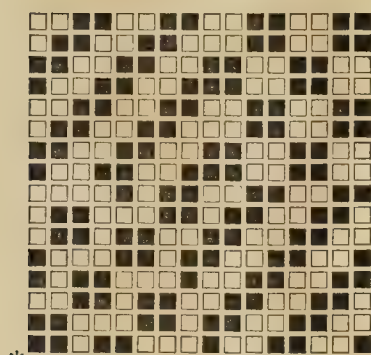


MANTLE CLOTH

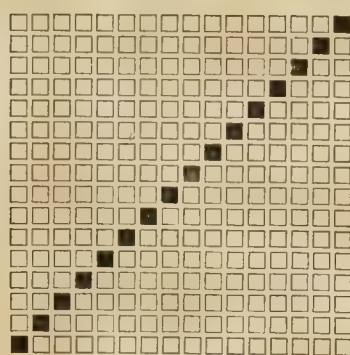


Saxonies and Cheviots.

No. 277.



* Pegging Plan.



Draft.

Warp :

Weft :

6 Fawn	16 cuts.	6 Black	16 cuts.
1 Dark Brown	„	1 Black and Scarlet	36/36.
1 Fawn	„	1 Dark and Blue Green	„
2 Dark Brown	„	3 Black	16 cuts.
1 Fawn	„	1 Black Scarlet and Green loop.	
1 Orange	36/36.		
			12

12

Mohair loop about 12 cut. 300 yards per 2 ozs.

900 ends per inch. Warp : 16 cuts cheviot twist 36/36.
 30 picks per inch.
 33 inches wide in the loom.
 28 inches wide when finished.

Bright finish.

No. 278.

Warp :

Weft :



* Pegging Plan.

8 White. As warp, but Fawn for
 8 Black. White.
 8 White.
 6 Olive Brown. 16 cut Cheviot.
 2 Black.



Draft.

48

900 ends per inch.
 30 picks per inch.
 33 inches wide in the loom.
 28 inches wide when finished.
 Bright finish.

No. 279.

Design same as No. 278.

Warp :

Weft :

5 Dark Olive Brown. 5 Black.
 1 Black and Scarlet. 1 Black and Blue.
 2 Black. 2 Olive Brown.

2-fold 30 cut or 4500 yards 1056 ends per inch.
 to 24 ozs. 32 picks per inch.
 33 inches wide in the loom.
 Short velvet finish. 28 inches wide when finished.

No. 280.

Warp :

Weft :



* Pegging Plan.

2 Black. 2 Indigo Blue.
 2 Old Gold. 2 White.
 1 Scarlet. 2 Indigo Blue.
 1 Black. 2 Yellow Sage or Fawn.



Draft.

2 White. 8
 2 Black. Pure White and Bright
 2 Old Gold. and Clear finish.
 1 Black.
 1 French Blue.
 2 White.

1408 ends per inch. 16 7500 yards per 24 ozs. or
 44 picks per inch. 50 cut 2-fold.
 32 inches wide in the loom.
 28 inches wide when finished.

The New Patterns of Worsted, Woollen and Mixed Cloths for Spring and Summer, 1886.

Merchants, during the past two weeks, have been busy with the patterns submitted to them by manufacturers for the first half of the year 1886. There are some really excellent fabrics for suitings, trouserings, &c., as well as cloths specially adapted for ladies' wear, which, in point of texture, design and colouring, are truly admirable, and have met with the success they merit. Fancy worsteds for suitings and trouserings, &c., in the better qualities of cloths, have succeeded especially well in meeting the wishes of merchants. In this department of the manufacture, rapid advances have been made in the combination of colour, and in the finish of the material. In the majority of the fancy patterns for the above named seasons, silk plays, as usual, an important part, and has been utilised to considerable advantage, not only in worsted samples, but in woollens also. It has proved very effective in most cases, and is, we venture to predict, destined to be used successfully for some time to come. In the designs of fancy worsteds, there seems to have been drawn no hard and fast line as to style and combination of colours, and in very few cases, in the samples we have seen, has there been an attempt to produce decided patterns; stripes, checks, and such like designs, having a stiff effect, are broken by an admixture of silk running through them. Of course, there are exceptions to this, but they are few. In the medium and lower qualities, the effects are similar in style, but, as a rule, these cloths have not sold very well, merchants preferring the better qualities of cloths. In all the qualities of material the stripes, checks, &c., are small. In woollens, the cheaper kinds of tweeds have met with fair success. The curled and knotted samples are still to be seen, although they are rather subdued in their effects, the curl or knot being woven in the fabric in rather smaller dimensions than in those for the Winter season. These yarns are also to be met with in the better qualities of tweeds, but we are inclined to think their sale will not be large. The curls in these fabrics do not stand up so prominently as formerly, being pressed close to the body of the cloth in finishing. Silk is used in some samples in the same manner as in the worsted patterns, and in a few fabrics, tinsel effects are produced, but those do not seem to be much in favour. In Scotch tweeds and cheviots some admirable specimens of design and colouring have been shown, and they have met with fair success, and in the north there seems to be a likelihood of an improved state of things during the next few months. We are pleased to note that many manufacturers, in the production of their fabrics for Spring and Summer, 1886, have, to a great extent, utilised the samples of cloth, in worsted, woollen, and mixed fabrics, which we have been issuing at the rate of £2 per 100 samples, and this they have done with success. We keep on hand a stock of samples for future seasons; they give the latest reliable ideas for ensuing styles, and each sample is quite distinct, either in design or colouring, from the others.

German Carpet and Jute Manufactures.

The Germans have of late been making strenuous efforts to fix in their own country some of those staple branches of textile industry in which they are backward, and excelled by England. We send large quantities of yarns of different descriptions to Germany, but we also import yarns from thence in no small quantities, including the "fingering wool," known and sold as Berlin wool, in which our Newgate Street houses make a considerable return, and also vigonia yarns for manufacturing purposes, which are largely sold in Glasgow, and used both there and at Paisley for various classes of goods; and special attention has been directed to the possibility of largely increasing the carpet and jute branches in Germany. It was lately stated in the *Frankfurter Zeitung* that the carpet trade, although only a comparatively new trade in Fatherland, is already being very successfully carried on in large establishments in several centres, and that the demand for German carpets is increasing, but for the most part runs upon the cheaper qualities. Also, that the trade in imitation Smyrna carpets has grown considerably, the fine quality, rich designs, and tasteful combination of

colours obtaining for them a continually widening market in Germany. It is urged that attempts might well be made to create an export demand for these goods, and that German manufacturers would be more likely to be successful with them than with the cheap so-called Brussels carpets in competing with English carpets in the international market, though the production of Brussels and Tournay velvet carpets is said to be increasing. It has been pointed out that the complicated nature of the manufacture, and the high incidental cost, with the relatively small consumption of high-priced carpets in Germany, are difficulties in the way of a large production in the better qualities, and therefore the industry is not likely to be fully developed until a foreign demand has been cultivated. The imports of the better class of English carpets with Germany is also said to have greatly diminished in recent years, and now scarcely amount to £50,000 per annum. But the chief obstacle in the way of the creation of an export trade will be found, it is considered, to rest with the fact that, with the exception of jute, almost all the yarns required for this branch have to be procured from England. Very few German spinners can supply the coarse linen yarns that are wanted for the backs of carpets of sufficiently good quality and equally low price. The threefold cotton yarns are also obtained from here more cheaply than in Germany, although the duties and charges for carriage add 40 per cent. to the cost. It is further stated that the duties on the weft yarns are equally damaging to the carpet-weaving branch, as the German spinners cannot compete in price with English carpet yarns. In jute goods some very ingeniously and tastefully made fabrics have been sent over here from Germany, which, although of a minor order, give evidence of great tasteful advance in this branch of textile production, especially in such goods as curtain materials, table covers, crumb cloths, &c. Some of the curtain stuffs, though cheap, have a simple elegance of their own, consisting of a plain drab cloth with a coloured border; the table covers being also of the same character with a thick, knotted fringe. The specimens we have seen are certainly in far better taste and more skilful application than anything we have seen from Dundee, where, it is true, there is a greater profusion of colour displayed in such articles as crumb cloths for the floor, but far more common-place looking and inferior than the jute goods in this line from Germany. It is reported that the Association of German Jute Manufacturers lately held two meetings in Hanover with the view to the formation of a syndicate for the sale of the general production of jute fabrics in Germany. Nearly every member of the association took part in the meetings, and an agreement on the main points of the scheme was come to.

Fancy Woollen Hosiery Manufacturing.

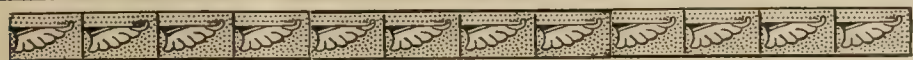
THE EARLY SHOWING OF SAMPLES.



IN the present severe competition in all branches of the textile trades, manufacturers of any class of goods do not, as a rule, require much advice as to the early preparation of patterns for ensuing seasons, but still some remarks made by a contemporary on the advisability of being on a par in this respect, with our continental neighbours, will not be out of place, and will probably stimulate our readers to the urgency of the question. These remarks may be read not only in connection with the hosiery trade, to which they have been specially addressed, but also to most of the branches of the textile trades. In speaking of the necessity of showing patterns of goods early, our contemporary says:—"Samples for the ensuing season are now being shown, and orders solicited from the wholesale houses in London and the principal provincial towns wherein there are drapery warehousemen, and many manufacturers need no urging to have their samples ready, for they have nearly come to a stand still with their old ones, and fresh engagements are indispensably necessary to keep them going satisfactorily. This is especially the case in all main and principal branches of production, the goods appertaining to which require a great deal of time in their preparation; but for many descriptions of fancy goods it would be pronounced too early to bring them out, and some of the ready-made branches especially are even now engaged with goods of the current season, such as those belonging to

the lace trade in the form of fichus, little coverings for the shoulders, and various fancy articles. We, however, desire to point out upon the present occasion, that even in those divisions, which are to be regarded as comparatively late ones, the early completion of winter samples is a very important matter, even while current trade may be doing. The Leicester fancy woollen hosiery manufacturers are wise in their generation in this respect, for the samples of all the most important and leading makers have been exhibited and orders taken, these being usually ready at the commencement of May. The necessity of this being done betimes has been forced upon the attention of manufacturers there on account of the length of time that is consumed in the wholesale houses in the due and proper preparation of travellers' samples, which are often a month or so about, the job being a long one, and needing to be done leisurely and with considerable exactness. Orders are given to the fancy hosiery people for certain quantities of these goods which secure the buyers' approbation, and a small quantity of each, varying from a couple of dozen to six dozen, are needed for immediate delivery. A single one of these out of a dozen are put aside (or mounted on cards in some instances) to make a set of patterns given to each traveller; the duplicate books for reference being made up at the same time. The "set" of patterns being once formed, these mainly constitute the variety of the season from which orders are taken and the chief sales made, and it is a troublesome matter to supplement them. This has of course to be done in the case of any attractive article being produced that needs must be had, but there is a great deal of trouble in advising a large number of travellers, and making up supplementary specimens about which there is often much confusion and advising by letter; and if manufacturers realized this to the extent that buyers in warehouses do, they would cease to feel the surprise that is occasionally experienced when their wares are not taken up by the different houses, even though it is apparent to everybody that they are of a saleable, and may be even of a highly attractive description, but cannot readily be adopted on account of the reason we have mentioned. Goods in bulk cannot well be taken into stock until after June 30th, when stocks are taken down, and on July 1st, the winter trade nominally commences in the wholesale. It is true, but little business may actually be done at the exact term, but country travellers go off one by one on their respective journeys at intervals of a week or fortnight, in accordance with the demand of their existing "grounds" which differ in a very material degree. Hence in the Irish trade, and the North of England and Scotland, fancy hosiery goods may be sold very early, and first sales made, repeat orders come quickly; and hence will be readily seen the great advantage of "taking time by the forelock." Our remarks apply principally to fancy goods of special kinds, the early preparation of samples of which are a good deal neglected on account of the assumed obstacle referred to; but in these times of severe trade competition, a point of advantage cannot well be afforded to be overlooked, and English manufacturers, as a rule, are much more behindhand than their Continental trade competitors. Keeping to the principal instance we have adverted to, that of fancy woollen hosiery, the Germans now bring a strong opposition to bear upon the trade. Formerly, the colourings of their goods in this department were often at fault, the German taste being very prominent and noticeable, such as mainly drab grounds with mauve and similar relieving colours, often of a very "flat" tone; when brighter and higher colours, such as scarlet, crimson, &c., are more in accordance with English taste for winter use; but of late years they have overcome this defect, and now colour their articles in exact accordance with the demands of the English market, so as to lose the distinguishing appearance which once used to characterise them.

At a time when everybody regarded the arrangements for a Treaty of Commerce with Spain as virtually complete, the startling information has arrived that the entire negotiations have fallen through. The Spanish Government have declined to fulfil some of the fundamental conditions contained in the Declaration and Protocol agreed to in December last, and consequently there is no prospect of a treaty being entered into. The Chancellor of the Exchequer is therefore free, if so disposed, to rearrange his Budget proposals so far as regards the increase of the shilling scale of duties from 26 to 30 degrees of alcohol; and there are not wanting advocates of a retaliatory policy against Spain so long as she prevents English goods from entering the Peninsula under most-favoured nation treatment.

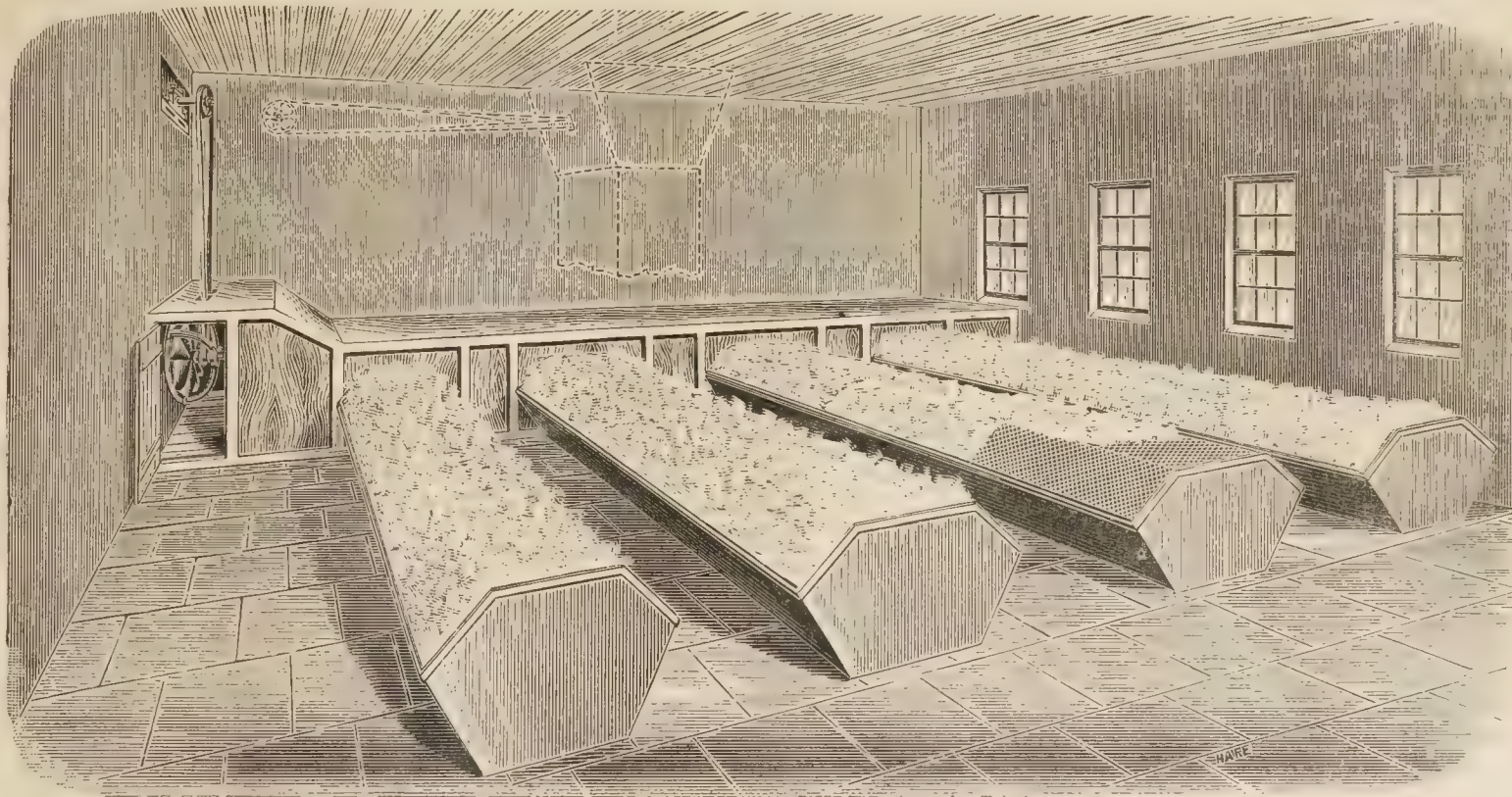
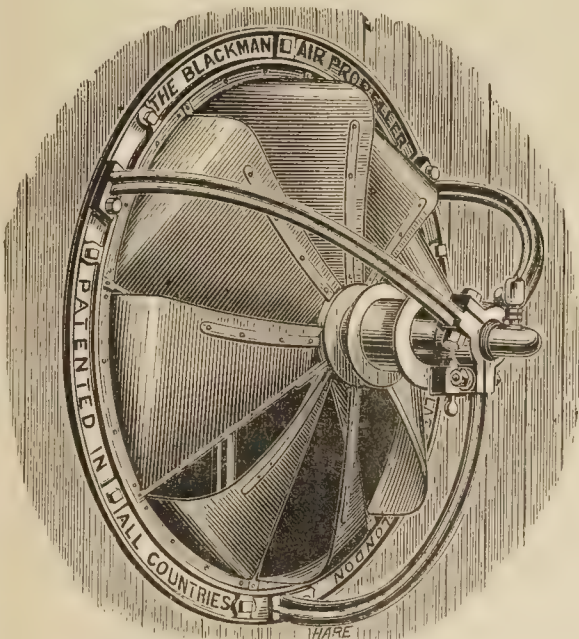


MACHINERY, TOOLS, &c.

Wool and Cloth Drying.

THE BLACKMAN AIR PROPELLER.

Numerous improvements have been the outcome of experiments made in the artificial drying of wool, yarn, and cloth, so as to keep the material and its colour as nearly as possible in their original state. Many processes have been described by us during the past few years, and, as a rule, those that, in actual working, have proved the most successful, have been those in which the means employed have most nearly approached the natural method of drying in the open air. It is now generally admitted that drying wool, &c., especially if the keeping of its colour be a desideratum, should not be conducted by any heated process, as this has a tendency to injure, more or less, both the fibre and the colour of wool, yarns, and piece goods; much of the injury, of course, depending on the quality and variety of colour in the material to be acted upon. The heating processes have, therefore, gradually given way to more scientific, and more natural, methods of drying. Where heated, or even cold, air is used, the great difficulty hitherto experienced has been to remove the air, which is generally saturated with moisture, rapidly, as, unless this be done quickly, the drying process is much retarded, and, in consequence much valuable time is lost. In order to effect the removal of the air, there is no mechanism so efficient as the Blackman Air Propeller, which has recently been brought under our notice. Numbers of these propellers are now at work in factories in different parts of the United Kingdom, and are being used upon nearly every commodity that requires a drying process in its manufacture. But in the textile trades it has been proved especially efficient in its work. The space at our disposal will not admit of a lengthy description of its mechanism and capabilities, but from the annexed illustrations sufficient may be gleaned to prove to those interested that the propellers are worthy their earnest attention. In the drying of wool, tables covered with wire netting, upon which the wool is spread, is the most convenient shape, but other methods may be utilised by spreading the wool upon perforated floors. The propeller is fixed in some convenient part, so that when at work it draws the air through the netting or perforated floor, and then through the wool, a continuous stream of air passing through the material acted upon. Of course, the quantity of wool, &c., dried in a given time depends on several obvious conditions, and also upon the size of the propeller. In the drying of cloth, which is generally effected by manufacturers in machines of one kind or another, the propeller is fixed to the machines so as to pass the air rapidly through them. All the moisture absorbed by the air is immediately carried away, fresh dry air being brought continuously into its place. The propeller is the result of continued and costly experiments. The blades are so formed, especially towards the periphery, that all radial and counter flow of air is prevented; the air is attracted or drawn in towards the whole of the supply surface, about 40 per cent. entering around the periphery, and 60 per cent. on the side, and all the air thus operated on is impelled directly forward from the discharge side of the Propeller almost without friction or waste of power. The Propeller is so constructed that the whole of its surface is made use of either for the entrance or exit of air. The feed or supply area is much larger, as it ought to be, than that



for discharge. The form and position of each blade are such as have been found by experience to be the best adapted for producing a maximum result under average circumstances. It moves very large volumes of air with comparatively little power, with a minimum of noise and friction, and against such an amount of resistance or "water gauge" that it fulfils happily the conditions most desired in mechanical ventilation. It is very light and easily fixed in any position vertical or horizontal. The best results are, we are told, obtained by a 48-inch Propeller (the largest size made), which presents a sectional surface of 12 square feet. The wheel being eight inches deep, has a large feed surface, the dimensions of which are, the depth of the wheel by its circumference (12 feet), equal to eight superficial feet, and this, added to the 12 feet at the side, gives 20 feet of feed surface and 12 feet of delivery surface for a four feet diameter Propeller, which, when driven at 330 revolutions per minute, will move 15,000 cubic feet of air per minute, requiring rather less than one actual horse power. When driven at 570 revolutions it will move 30,000 cubic feet, or 1,800,000 per hour, requiring $2\frac{1}{2}$ horse power. In these figures free access and exit for the air is taken for granted, more power is needed where resistance has to be overcome. The Propeller is made in sizes varying from 24 inch to 48 inch diameter, the cost of the larger size being £30. The Blackman Air Propeller Co., Limited, 57, Fore Street, London, are the sole makers of the machine.

Apparatus for Winding and Twisting Silk Cocoons and other Fibres.

An invention for cocoon silk winding has been patented by J. Lavenez, of Lyons. The invention relates to a process by which thread with a regular twist is obtained from raw silk at one operation, that is, to a process according to which a thread is obtained from raw silk twisted warm during the operation of reeling from the cocoon, which silk possesses certain peculiarities and qualities absent from threads of raw silk formed by several successive operations. Two new kinds of threads have been obtained by this process, to which are applied respectively "poils" and "trames," names by which the corresponding old kinds of thread are generally known in the silk trade. Several filaments from the cocoons form raw silk thread. A thread of raw silk thrown or twisted upon itself is called "poils," and the union of two or more raw silk threads twisted together, "trames." Many attempts have been made to obtain raw silk threads twisted at the time of reeling, but hitherto they have failed. The usual methods adopted for the purpose have been to lay groups of filaments one around the other, sometimes in one direction, sometimes in another, in such a manner that, during the subsequent operations, and notably at the moment of ungumming, the filaments straighten out again, and the labour spent in uniting them by

twisting is lost. The new process avoids this defect, and ensures a perfectly regular and uniform twist in the same direction throughout the length of the threads, and by means of the apparatus the number of turns in a given length can be regulated. Threads formed of filaments twisted out and moist bind together intimately, and effect a perfect union so that the threads will not open or fray while undergoing the operations of the loom. The threads also possess elasticity and tenacity, and the twist given by this process to "poils" and "trames" (single or compound threads) is scarcely visible, so dense is the thread. The threads can only be separated by scouring in a hot alkaline lye, and this new class of thread retains the twist after the operations of scouring and dyeing. The apparatus, by which this improved method of winding and twisting cocoon silk is carried out, consists of a feeding wheel cylinder, or its equivalent, having a uniform rotary motion, which draws off the raw silk from the cocoons while in a damp and heated state, and delivers it to a rotating flyer, which twists and winds it upon a bobbin loosely mounted on a fixed stud axle surrounding the flyer spindle. The bobbin turns under the slight tangential traction which it receives from the "poil" or "trame." The cocoons are placed in a basin

of hot water, and the filaments of silk are led through one or more guides of glass, porcelain, or other suitable material, and laid around the feed wheel or cylinder, and thence pass through similar guides, carried by the flyer, which, by its rotation, twists the filaments and lays them on the bobbin. The stud axle is carried by a cast iron rail of a length sufficient to receive the desired number of spindles. This stud axle serves as a guide for the flyer spindle, which rests in a step bearing, on the copping rail. Rotary motion is imparted to the flyer spindle by means of a pulley mounted loosely on the lower end of the stud axle. The pulley carries, by means of pendant arms, a collar provided with a pin or stud, which slides in a groove cut longitudinally of the spindle, and thus allows of the spindle rising and falling while being rotated. The combined working of the three principal instruments, namely—the feed wheel, or its equivalent, the fly frame, and the loose bobbin, permits of giving to the thread, while being distributed, the required number of twists in a given unit of length. The forms and dimensions of these several instruments may be varied. The feeding apparatus may be motionless, or may be replaced by one or more friction surfaces to regulate the speed of the thread. The combined apparatus above described can be used for any threads, either of raw or worked silk, cotton, wool, flax or hemp which may require to be twisted simultaneously with another operation. It can also be used to lay threads around a central thread. If necessary, the Italian crossing can be interposed between the first set of guides, by means of a “tavelette” or the Chambon warping device, produced by the crossing of two adjacent threads, and the basin of hot water may be replaced by a set of reels, if it be desired to unwind the skeins, and to twist their threads either into “poils” or “trames.” This new apparatus automatically ensures the regularity of the twist or turns to the yard, whatever the varying diameter of the bobbin, and the amount of twist can be easily adjusted. The apparatus above described is applicable to the winding and the twisting of threads of all kinds to which it may be desired to give a mathematically regular twist.



Mordants.

(Continued from Page 58.)

Acetate of copper, generally known as verdigris, is of different kinds, the principal of which are the blue and the green. It is used in printing and dyeing blacks on silks and on hats; in logwood blues on woollens; in catechu colours, where it acts as an oxidizing agent, in “resists” for dip blues, and in some steam colours. Both the blue and the green verdigris were at one time imported from the South of France, but it is often made in a liquid state in a similar manner to red liquor. In a gallon of water at about 160° F., dissolve 4 lbs. of blue stone and 4 lbs. of sugar of lead, and stir frequently; leave the liquid to settle, and then clear it off and decant for use. To make ammoniacal copper:—Dissolve the sulphate or nitrate of copper in water and add sufficient ammonia to re-dissolve the pale blue green precipitate, which is first formed, to a full violet colour. If the liquid be required for future use, it must be kept in closed vessels. Cotton padded in the dilute liquid takes a pale green. Muriate of copper, or chloride of copper is prepared by mixing solutions of chloride of calcium (muriate of lime) and sulphate of copper, and drawing off the clear liquid. This mordant is more used on the Continent than in Britain. We produce the same effects by using a mixture of nitrate of copper and sal-ammoniac. Nitrate of copper is generally sold as a deep blue liquid of the specific gravity of 80° or 90° Twaddle. It may be produced by double decomposition of sulphate of copper and nitrate of lead, or by dissolving scrap copper in nitric acid, but much of that now used is not made by manufacturing chemists, but by those who work in metals, and who use nitric acid to clean copper, brass, bronze, &c., and who sell the liquor resulting from the operation at low rates to dyers and printers; but it is often mixed with impurities, such as lead, zinc, iron, &c. In order to test nitrate of copper, add ammonia in large quantities; should anything remain undissolved, it will probably be either lead or iron; then if some of the nitrate of copper be mixed with a little pure muriatic acid, and a current of sulphuretted hydrogen be passed through it, the whole of the fixed matter except zinc and iron will be precipitated. Then filter the mixture and evaporate the clear liquid to dryness; should anything remain it will probably be one of these two metals. Sulphate of copper, called also blue vitriol, blue stone, and Roman vitriol is now made direct from the ore. It is found in fine deep blue crystals which contain 32 per cent. of oxide of copper, and lose their crystalline form when heated for a time to a little above 212° F., and fall to a white powder. It dissolves in half its weight of boiling water, and in three times its weight of cold water.

Sulphate of copper is mixed with a variety of impurities, but the most common is sulphate of iron; this may be present to a great extent without altering either the colour or the form of the crystals. In order to detect the presence of this, or of any other salt of iron, boil a little of the solution of the sample with a few drops of nitric acid, and then add a large excess of ammonia. The oxide of copper thrown down at first is re-dissolved by the addition of this ammonia, whilst the iron will be found floating in the liquid in reddish brown flakes. Another, but less common impurity is sulphate of zinc, to detect which, pass a current of sulphuretted hydrogen gas into a solution of the sample, to which a little pure hydrochloric acid has been added, filter off the black sediment (sulphide of copper), evaporate the clear liquid to dryness, and apply a strong heat; if the sulphate of copper be pure nothing will remain, but if, on the contrary, it were contaminated, then there will be a remainder of the impurities. The uses of the blue stone in dyeing and printing are not extensive, but it is of service in woollen dyeing and in “resists” for dip-blues. Admont vitriol, Cyprus vitriol, Salzburg vitriol, and Eagle vitriol, are mixtures of blue vitriol and of copperas. “The compounds of copper,” says W. Crookes, “have an oxidizing action. They take up oxygen from the air, and pass it over to any organic matter with which they are in contact. This is the principle of the action of blue stone, or rather of the sulphuret of copper in printing and dyeing aniline blacks; they act, too, in many cases, as destroyers of colour. Where copper is not specially required, it must be carefully avoided. A little of a salt of copper put in the indigo vat gradually oxidizes the reduced (white) indigo present, converts it into the ordinary blue, insoluble state, and of course renders it incapable of dyeing. The same principle explains the action of salts of copper in ‘resists’ in indigo-blue styles.”

(To be continued.)

The American Tariff and Bradford Goods.

A case of considerable interest to Bradford merchants has been recently before the United States Circuit Court in Philadelphia, and the decision arrived at, while opposed to the wishes of the Protectionists of America, will materially favour the introduction of Bradford goods. The case turned upon the correct interpretation of a paragraph in Schedule K of the American tariff referring to “women’s and children’s dress goods,” which reads as follows:—

Women’s and children’s dress goods, coat linings; Italian cloths, and goods of like description, *composed in part of wool*, worsted, the hair of the alpaca, goat, or other animals, valued at not exceeding twenty cents per square yard: five cents per square yard, and, in addition thereto, thirty-five per centum ad valorem; valued at above twenty cents per square yard: seven cents per square yard, and forty per cent ad valorem; *if composed wholly of wool*, worsted, the hair of the alpaca, goat, or other animals, or of a mixture of them: nine cents per square yard, and forty per centum ad valorem. But all such goods with selvages, made wholly or in part of other material, or with threads of other materials introduced for the purpose of changing the classification, shall be dutiable at nine cents per square yard, and forty per centum ad valorem: Provided, that all such goods weighing over four ounces per square yard shall pay a duty of thirty-five per centum ad valorem.

The question at issue was—To what do the words “all such goods” after the word “Provided,” refer? and the decision has an important bearing to English importers of such goods, of which, it need scarcely be added, a large proportion are forwarded from Bradford. The American Secretary of the Treasury originally decided that they referred only to the all-wool goods; but the Attorney-General afterwards declared that they referred to all the goods, partly and wholly of wool, specified in the paragraph, and, in consequence, the Secretary reversed his first decision. The matter was one, however, too important to the textile trade to be allowed to rest here, and certain importers, deeming the Attorney-General’s opinion to be wrong, brought the suit alluded to above to test the matter. The Circuit Court decided the question in favour of the view of the importers—namely, that the words “all such goods” refer only to all-wool goods, and not at all to goods composed in part of wool. On the other hand, it is contended in certain American circles that the two judges who have given the above as their interpretation of the paragraph in Schedule K, have, by so doing, not accurately

represented the wishes of the framers of the tariff. In proof of this, the paragraph in the old tariff, of which the one quoted above is a substitution, is cited, and which we give as follows:—

Women's and children's dress goods and real or imitation Italian cloths, composed wholly or in part of wool, worsted, the hair of the alpaca, goat, or other like animals, valued at not exceeding twenty cents per square yard; six cents per square yard, and, in addition thereto, thirty-five per centum ad valorem; valued at above twenty cents per square yard: eight cents per square yard, and, in addition thereto, forty per centum ad valorem. But on all goods weighing four ounces and over per square yard, the duty shall be fifty cents per pound, and, in addition, thereto, thirty-five per centum ad valorem.

It will be seen that it is upon the interpretation of the concluding sentence of the paragraph in question that the issue turns—whether or not it refers to all the goods mentioned in the paragraph or to only a portion of them—the intention of the framers of the tariff being to protect from foreign competition to a greater or less degree certain classes of fabrics. The decision of the Circuit Court, however, undoubtedly defeats the protective purpose of the tariff, so far as this particular class of goods is concerned, and renders their introduction to the American market more easy to the English importer. The matter being of vital importance, in was intended to appeal to the Supreme Court, but we learn that the Court declines to entertain the appeal, so that the decision must be regarded as final.

ODDS AND ENDS.

According to reports from the Rhine Provinces, the German velvet industry continues in a very depressed condition. In Viersen, with 23,000 inhabitants, and 3,000 velvet looms, many families are in want of food in consequence of the stoppage of machinery. In the district of Kempen matters are no better, and from Vorst it is reported that both the extensive hand industry and the power-loom factories are working short time, one new mill being entirely closed.

The prospects of any commercial legislation this Session are rather remote. Very few Bills have been introduced in the interest of the mercantile community, and of these none appear to be pushed forward with any amount of vigour. The interests of trade appear to be subordinated to political considerations, and we fear this will continue to be the case, unless the great commercial towns put more pressure than they have hitherto done on their representatives in Parliament.

Textile fabrics, when shipped to distant markets, are often subject to mildew, and it is consequently of the utmost importance to prevent this occurrence. Hitherto, however, it has not been found possible to find a remedy, although the precaution of carefully packing the fabrics in tin-lined cases has invariably been taken. A novel suggestion has recently been thrown out. It is that the soldered metal packages should be exhausted of air, which could easily be done by means of an air pump. As a matter of fact the mildew does not form in a vacuum.

A somewhat unusual suggestion in connection with a branch of the textile trades, was made during the Parliamentary inquiry into the subject of Irish industries, recently held at Westminster by Sir E. Wilmot's committee. Professor Sullivan was again examined, and during the course of his evidence he stated that there was a considerable number of small manufacturers engaged in the woollen trade in Ireland, but the absence of credit was a bar to the development of their trade. The question of subsidising this class of manufacturers in the same way as the fishermen had been aided by the State and by Lady Burdett Coutts, would be an experiment worth trying, according to the professor's opinion. That woollen manufactures can be successfully carried on, even of a high order, and above the rank of friezes, is amply evidenced in the instance of Messrs. Mahony Bros. of Blarney, near Cork, who have made for themselves a reputation for their double-warp Tweeds of superior quality.

Official statistics show that there is no country in the world, not even the United States, which can show so wonderful a progress in all the elements of material well-being, as that which has characterized the later years of New South Wales. In a single decade its population has increased nearly 30 per cent., the number of children receiving instruction has more than trebled, the number of mills and manufactories has been quadrupled, agriculture has greatly expanded, nearly twelve millions have been added to the live stock of the colony, there has been an increase of about 80 per cent. in the output of coal, the clip of wool is six times as great as it was ten years ago, the external commerce of the country is more than double what it was then, and its revenue has risen "by leaps and bounds." Truly, a wonderful record, as well as an impressive testimony to the lavish bounty of Providence, and to the industry and enterprise of the Anglo-Australian race settled in that part of the great island continent.

There is, it is pointed out in late Canadian journals, a fair prospect of the passage of a much-needed Canadian Bankruptcy Bill this Session. The Special Commission of the House of Commons has had the matter under consideration for weeks, and, after careful deliberation and thorough discussion, has submitted a Bill to the House generally acceptable to the mercantile community, and this Bill the Government propose to take in hand, in order to obtain the opinion of the House on its principles. If a majority of the members consent to the provisions of the measure it will be passed into law.

THE GAZETTE.

Adjudications of Bankruptcy.

Robinson, T., Manor House, Farnley, near Leeds, woollen cloth manufacturer.
Williams, J., 7, Lloyd Terrace, Whitelaw Road, Chorlton-cum-Hardy, near Manchester, cloth manufacturer.

Bills of Sale.

	£	s.	d.
Beaumont, S., Bron Mills, Meltham, yarn spinner.	120	0	0
Baxter, W., Alcester Road, Moseley, late woollen warehouseman assignment.			
Dewhurst, A., 38, Glebe Street, Great Harwood, weaver.	100	0	0
Goodman, L., Wade Lane, Leeds, cloth manufacturer.	80	0	0 ab.s
Lymbery, A. R., 20, Cromwell Street, Nottingham, lace manufacturer.	125	0	0
Stansfield, J., Milner Royd, near Halifax, woollen manufacturer.	1282	10	2
Shaw, F. (and wife), Main Street, Huddersfield, clothing finisher.	50	0	0
Thomas, J., Mill Factory, Newport, Pembroke, woollen factor.	60	0	0
Wilson, R., Batley Carr, woollen manufacturer.	4000	0	0

Dividends.

Evans, W. D., and H. Cant, Eastern Chemical Works, Marsh Gate Lane, Stratford, Essex, aniline dye manufacturers and patentees; first and final dividend of 9d. in the pound, at the offices of Mr. W. Tanner, Solicitor for the Trustee, 3, Circus Place, Finsbury Circus, London.
Rosenthal, E. (trading as Rosenthal Brothers), 17, Jewin Street, London, trimming manufacturer, 3d. (first), Chief Official Receiver's Office, 33, Carey Street, Lincoln's Inn.
Towle, R. F., 9, New Mill Street, Long Eaton, Derbyshire, lace manufacturer, 6s. 8d. (first and final), Official Receiver's Offices, Exchange Walk, Nottingham.

Dissolutions of Partnership.

Cunliffe, J. H., and J. H. Kaye, Calf Hey Mills, Rochdale, Lancashire, manufacturers of cotton goods.
Butler, T., and T. B. Bloom, Nottingham, lacemakers.
Doniger, M., and R. J. Wood, Factory Yard, Miller Street, Manchester, embroiderers and manufacturers.
Taylor, C., and J. Foster, 10, Middle Pavement, Nottingham, lace manufacturer.

PATENTS.

Applications for Letters Patent.

Actuating dabbling brushes for combing wool, &c., by electricity. J. J. Richardson, Bradford.	29th April 5,302
Adapting designs from curtains to table cloths and other purposes in connection with weaving and printing. A. F. Link, London.	30th April 5,357
Assisting the traveller in spinning upon the bare spindle of spinning frames, or winding upon doubling frame spindles. B. A. Dobson and E. Gillow, Bolton.	5th May 5,504
Appliances to looms for making frets or galls in headings in weaving cotton, &c. W. Thompson, Halifax.	8th May 5,670
Apparatus by which cloth woven by looms is wound upon the cloth rollers of such looms as the cloth is woven. J. Cowburn and C. Peck, Manchester.	13th May 5,894
Applying chenille to bobbin net lace, &c. E. Lion, London.	14th May 5,961
Arrangement of guards or covers for winding machines. W. J. Gamble, Belfast.	26th May 6,377
Box ends of lathes for looms. D. H. Hesslegrave, London.	2nd May 5,430
Belting. J. Moxon, London.	6th May 5,572
Construction of flyers for machinery for spinning and doubling flax, &c. T. Oxley, Manchester.	1st May 5,397
Cone driving mechanism for slubbing and roving frames for preparing fibrous materials and for other machines. G. Young, Manchester.	7th May 5,618
Carding engines. J. Elce and T. S. Whitworth, Manchester.	13th May 5,877

Calico printing machines. W. Stewart, Glasgow.	16th May 6,057
Construction of lubricating cups and washers for spinning. C. Brigg, Bradford.	19th May 6,090
Carriages for bobbin net or twist lace machines. J. R. Hancock, London.	21st May 6,234
Carding fibres. G. Goldthorp, Halifax.	28th May 6,479
Drying machines. W. Horsfield, Newington.	28th April 5,249
Drawing, roving, and spinning machines. J. Hall, London.	29th April 5,297
Drying wool, &c. J. B. Whiteley and W. Whiteley, Halifax.	1st May 5,371
Dyeing a fast yellow colour on cotton, &c. J. J. Kaye, Halifax.	2nd May 5,410
Drawing and spinning hemp, &c. A. V. Newton, London.	5th May 5,550
Disconnecting gear for power looms. P. Jensen, London.	6th May 5,614
Decorating surfaces, such as calico and fabrics, &c. W. R. Davis, London.	8th May 5,701
Dobbies of looms. F. W. Jepson, Halifax.	9th May 5,710
Dyeing apparatus A Munzinger, London.	14th May 5,947
Dyeing woollen, silk, and other woven or felted fabrics and yarns. J. Refitt, London.	22nd May 6,295
Dyeing woollen, silk, and other woven or felted fabrics and yarns. J. Refitt, London.	22nd May 6,296
Drying silk, wool, cotton, and other fibre. W. H. Thorpe and G. Pepper, Halifax.	23rd May 6,333
Dyeing cotton in hanks. A. M. Clark, London.	27th May 6,471
Finishing or surfacing web or other textile fabrics. G. Dyke, Yeovil.	29th April 5,283
Finishing woollen, &c. G. H. Nussey and W. B. Leachman, London.	9th May 5,745
Feeding carding or other machines. H. J. H. King, Stroud.	9th May 5,818
Gassing yarns. J. W. Dawson, London.	1st May 5,406
Hearth-rugs and mats made of wool, cotton, and jute. J. Greenwood and J. Moore, Halifax.	20th May 6,166
Imitation Astrachan trimming fabrics. A. G. Darby and A. L. Jordan, London.	29th April 5,323
Looms. R. Hall and S. S. Hall, Manchester.	28th April 5,214
Looms. R. Hall, and J. Hobson, Manchester.	28th April 5,215
Looms for gauze, &c. T. R. Ashenhurst and J. T. Lishman, Bradford.	21st May 6,233
Looms for loop and pile or chenille stripes in combination or separately, also for spots. P. Blake, Glasgow.	26th May 6,393
Looms. J. Roberts, London.	27th May 6,469
Machines for manufacturing cards for Jacquard apparatus. J. H. Johnson, London.	28th April 5,246
Mechanically worked lubricators. P. Jensen, London.	28th April 5,257
Manufacture and treatment of slag fibre or wool for freeing it from "shot" and forming it into felting and other products. D. H. Dale, London.	2nd May 5,449
Manufacture of artificial silk-like filaments from viscous liquids, and apparatus for that purpose. C. D. Abel, London.	16th May 6,045
Ornamental fabric and process and apparatus therefor. E. P. Alexander, London.	25th May 6,375
Ornamenting warp machine-made lace with frosted tinsel threads, and apparatus therefor. A. L. Caporn and H. Smithurst, London.	26th May 6,415
Picking motion of looms. W. Greenwood and A. Hartley, Manchester.	6th May 5,566
Producing combined fibrous and like threads, and the manufacture of felt-like fabrics therefrom. A. Wilkinson, London.	19th May 5,861
Preparing waste for bleaching purposes. T. J. Hutchinson, Bury.	16th May 6,018
Preparing wood wool. W. E. Heys, Manchester.	16th May 6,020
Picking mechanism for over picked looms. J. Boyd, Glasgow.	16th May 6,026
Positive expanding and contracting comb for sizing and beaming machines and warping mills. G. R. B. Kempton, West Ham.	21st May 6,193
Pneumatic drying machines. J. Dick, Glasgow.	26th May 6,394
Raising and lowering shuttle boxes of looms. C. Bedford, Halifax.	6th May 5,560
Ring spinning and doubling frames. R. T. Gillibrand, London.	6th May 5,573
Regulating the healds in looms. R. Eckroyd and J. Bentley, London.	8th May 5,689
Ribbed fabrics and apparatus therefor. S. Davies, F. Moore and J. I. Colman, London.	14th May 5,941
Ring spinning and doubling frames. W. L. Wise, London.	14th May 5,963
Rollers for printing floor-cloths and other fabrics. G. Parker, Glasgow.	19th May 6,106
Ramie and similar textile fabrics and apparatus therefor. H. J. Haddan, London.	21st May 6,248
Ring spinning machinery. P. and R. and J. Eadie, Manchester.	21st May 6,252
Rollers and apparatus for holding rolled piece goods. W. Carnelly and G. W. C. Kirkham, London.	22nd May 6,282

Recovering useful products from soap water, dye water, &c. E. Taylor, Manchester.	23rd May 6,331
Ring spinning machinery used for spinning and doubling cotton, &c. P. and R. and J. Eadie, Manchester.	26th May 6,418
Shaft couplings. H. E. Newton, London.	28th April 5,250
Spinning, twisting and analogous machines. F. Wadsworth, London.	29th April 5,296
Spinning and doubling cotton, &c. J. W. Dawson, London.	1st May 5,407
Supporting the spindles of mules or jacks. A. G. Brooks, London.	1st May 5,409
Shuttles. J. and J. and H. Ingham, Halifax.	4th May 5,464
Stocks employed in the manufacture of yarn, &c. B. Preston, London.	6th May 5,613
Spool or pirn winding machines. J. B. and W. Whiteley, Halifax.	7th May 5,625
Spindles and tubes for spinning and twisting fibres. W. Walker and A. Binns, Halifax.	8th May 5,672
Slubbing and roving fibrous materials. W. Tatham, Manchester.	19th May 6,095
Stockinette fabric. R. H. Lendrum, Halifax.	20th May 6,163
Slubbing intermediate and roving frames for fibrous materials. S. A. Luke, London.	20th May 6,201
Shedding motions, letting-off motions, letting back motions, and shuttle guards of looms. C. Catlow, Halifax.	26th May 6,379
Sizing, drying, and beaming warps. W. G. Bywater, Holbeck.	26th May 6,390
Shuttle-box operating mechanism for looms. J. Brownlee, Glasgow.	26th May 6,420
Travellers in ring spinning. J. M. Hetherington and S. Thornton, Manchester.	30th April 5,335
Tubes for cap spinning frames. J. Bairstow, Halifax.	4th May 5,465
Transmitting motion between pulleys and drums. J. K. Starley, London.	22nd May 6,283
Uniting woven and other fabrics. T. T. Pulman, Accrington.	8th May 5,667
Varying the speed of the bobbins of roving, slubbing, and intermediate frames. S. Tweedale, Halifax.	9th May 5,709
Wool-combing machines. J. Midgley, London.	1st May 5,375
Warp lace machines. A. Dawson and E. Smith, London.	4th May 5,462
Woven driving bands or belts. J. Jackson, Manchester.	16th May 6,022
Working short cotton or residuum of combing machines. W. R. Lake, London.	19th May 6,137
Wet stop-motion of looms. G. Brown, Galashiels.	23rd May 6,316
Waterproofing and preservation of linen, &c. H. H. Lake, London.	28th May 6,509

Patents Sealed.

6,290	6,763	6,917	7,124	7,251	7,505	7,780
9,676	15,649	821	6,847	6,848	7,039	7,179
86	6,287	6,349	7,450	14,870	462	4,276
4,679	8,129	1,392	5,710	6,078	6,534	7,760
7,798	7,830	9,515	5,887	6,186	7,103	7,697
7,786	7,823	7,858	7,859	7,938	16,590	1,743
5,790	7,168	7,757	8,145	8,156	8,192	8,308
8,319	8,882	14,640	1,280	1,807	1,912	7,941
8,012	8,050	8,302	8,387	8,389	8,403	8,424
8,446	8,479	8,557	8,649	8,744	1,200	8,514
8,607	8,642	8,727	8,909	12,894	12,986	2,217

Complete Specifications Accepted.

9,761	9,755	9,756	10,099	4,030	7,286	9,778
10,284	3,506	4,003	7,789	8,827	10,578	10,720
4,259	4,263	9,751	10,518	10,519	10,649	2,421
2,800	10,147	10,796	10,880	4,689	4,766	4,767
4,768	4,790	9,295	10,439	10,692	10,881	10,893
10,915	10,988	11,140	11,211	11,975	10,194	10,225
11,095	11,122	11,159	11,181	11,333	12,705	13,273
13,274	15,330	4,950	11,016	5,302		

Provisional Specifications Accepted.

15,366	3,506	3,924	4,455	4,493	4,513	4,555
4,593	4,625	4,655	4,683	9,678	3,390	3,690
3,693	3,901	4,352	4,588	4,610	4,722	4,850
4,871	4,895	4,560	4,561	4,731	4,804	4,844
4,852	10,571	4,439	4,848	4,894	4,900	4,903
4,907	4,960	4,973	5,028	5,079	5,081	5,141
2,957	4,146	4,586	4,977	5,015	5,095	5,134
5,142	5,154	5,323	15,495	2,415	4,626	4,792
5,181	5,297	5,366	5,409	5,430	5,462	5,464
3,627	4,622	5,362	5,397	5,407	5,408	5,560
5,566	5,670	5,371	5,465	5,600	5,726	5,667
6,008						

